



DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2020-0058; FF09E21000 FXES1111090FEDR 234]

RIN 1018-BE87

Endangered and Threatened Wildlife and Plants; Threatened Species Status with Section 4(d) Rule for the Upper Coosa River Distinct Population Segment of Frecklebelly Madtom and Designation of Critical Habitat

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine threatened species status under the Endangered Species Act of 1973 (Act), as amended, for the Upper Coosa River distinct population segment (DPS) of the frecklebelly madtom (*Noturus munitus*), a fish species. We are also finalizing a rule under section 4(d) of the Act to provide for conservation of the species. In addition, we designate critical habitat for the Upper Coosa River DPS under the Act. In total, approximately 134 river miles (216 kilometers) in Georgia and Tennessee fall within the boundaries of the critical habitat designation. This rule applies the protections of the Act to this species and its designated critical habitat.

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: This final rule is available on the internet at <https://www.regulations.gov> in Docket No. FWS-R4-ES-2020-0058 and at <https://www.fws.gov/office/alabama-ecological-services/library>. Comments and materials we received, as well as supporting documentation we used in preparing this rule, are available for public inspection at <https://www.regulations.gov> under Docket No. FWS-R4-ES-2020-0058.

For the critical habitat designation, the coordinates or plot points or both from which the maps are generated are included in the decision file and are available at <https://www.fws.gov/office/alabama-ecological-services/library>, at <https://www.regulations.gov> under Docket No. FWS-R4-ES-2020-0058, and at the Alabama Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**, below). Any additional tools or supporting information that we developed for the critical habitat designation will also be available at the Service website and Field Office set out above and may also be included in the preamble and at <https://www.regulations.gov>.

FOR FURTHER INFORMATION CONTACT: William Pearson, Field Supervisor, U.S. Fish and Wildlife Service, Alabama Ecological Services Field Office, 1208-B Main Street, Daphne, AL 36526; telephone 251-441-5870. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species warrants listing if it meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range) or a threatened species (likely to become endangered within the foreseeable future throughout all or a significant portion of its range). If we determine that a species warrants listing, we must list the species promptly and designate the species' critical habitat to the maximum extent prudent and determinable. We have determined that the Upper Coosa River DPS of frecklebelly madtom meets the definition of a threatened species; therefore, we are listing it as such and designating critical habitat. Both listing a species as an endangered or

threatened species and designating critical habitat can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process.

What this document does. This final rule lists the Upper Coosa River DPS of frecklebelly madtom as a threatened species with a rule issued under section 4(d) of the Act (a “4(d) rule”) and designates critical habitat for the DPS.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We have determined that the factors driving the status of the Upper Coosa River DPS are habitat destruction and degradation caused by agriculture and developed land uses, resulting in poor water quality (Factor A).

Section 4(a)(3) of the Act requires the Secretary of the Interior (Secretary) to designate critical habitat concurrent with listing to the maximum extent prudent and determinable. Section 3(5)(A) of the Act defines critical habitat as (i) the specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protections; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination by the Secretary that such areas are essential for the conservation of the species. Section 4(b)(2) of the Act states that the Secretary must make the designation on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts of specifying any particular area as critical habitat.

Previous Federal Actions

On November 19, 2020, we published a proposed rule (85 FR 74050) to list the Upper Coosa River DPS of frecklebelly madtom as a threatened species. That document includes our not-warranted finding on the listing of the frecklebelly madtom species as a whole. Please refer to the November 19, 2020, proposed rule for a detailed description of previous Federal actions concerning the frecklebelly madtom species.

Summary of Changes from the Proposed Rule

Based on information we received during the comment period for the proposed rule, we have added an exception to the final 4(d) rule to except incidental take from silviculture practices and forest management activities that use State-approved best management practices to protect water and sediment quality and stream and riparian habitat. We explain this new exception in the preamble of this rule.

Also based on information we received during the comment period for the proposed rule, we clarify that the critical habitat designation for the Upper Coosa River DPS of frecklebelly madtom does not extend beyond the bankfull width of the designated rivers.

In addition, this final rule includes several nonsubstantive, editorial corrections for clarity and accuracy.

Supporting Documents

A species status assessment (SSA) team prepared an SSA report for the frecklebelly madtom. The SSA team was composed of Service biologists, in consultation with other species experts. The SSA report represents a compilation of the best scientific and commercial data available concerning the status of the species, including the impacts of past, present, and future factors (both negative and beneficial) affecting the species. In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we sought peer review of the SSA report. As discussed in the proposed rule, we sent the

SSA report to 10 independent peer reviewers, all of whom have expertise that includes familiarity with the frecklebelly madtom or its habitat, biological needs, or threats. We received two responses from peer reviewers.

I. Final Listing Determination

Background

The frecklebelly madtom (*Noturus munitus*) is a small, stout catfish reaching 99 millimeters (mm) (3.9 inches (in)) in length (Etnier and Starnes 1993, p. 324) and distinctively marked with dark saddles (Suttkus and Taylor 1965, p. 171). The species inhabits the main channels and larger tributaries of large river systems in Louisiana, Mississippi, Alabama, Georgia, and Tennessee. The species has a broad but disjunct distribution across the Pearl River watershed and Mobile River Basin, with populations in the Pearl River and Bogue Chitto River in the Pearl River watershed and the Tombigbee, Alabama, Cahaba, Etowah, and Conasauga river systems in the Mobile River Basin (Piller *et al.* 2004, p. 1004; Bennett and Kuhajda 2010, pp. 507–508).

Throughout its range, the frecklebelly madtom primarily occupies streams and rivers within the Gulf Coastal Plain physiographic province; however, it also occurs in the Ridge and Valley physiographic province in the Conasauga River and Piedmont Upland physiographic province in the Etowah River (Mettee *et al.* 1996, pp. 408–409). For the frecklebelly madtom to survive and reproduce, individuals need suitable habitat that supports essential life functions at all life stages. Three elements appear to be essential to the survival and reproduction of individuals: flowing water, stable substrate, and aquatic vegetation. A thorough review of the taxonomy, life history, and ecology of the frecklebelly madtom is presented in the SSA report (version 1.2, pp. 1–17).

The Upper Coosa River DPS of the frecklebelly madtom primarily occurs within northern Georgia and extends into two counties of Tennessee within the Conasauga River and Etowah River (see figure 1, below). Please refer to our proposed rule (85 FR 74050; November 19, 2020)

for a summary of the species' background information available to the Service at the time that the proposal was published.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for endangered and threatened species. In 2019, jointly with the National Marine Fisheries Service, the Service issued a final rule that revised the regulations in 50 CFR part 424 regarding how we add, remove, and reclassify endangered and threatened species and the criteria for designating listed species' critical habitat (84 FR 45020; August 27, 2019). On the same day, the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying to threatened species the prohibitions that section 9 of the Act applies to endangered species (84 FR 44753; August 27, 2019). We collectively refer to these actions as the 2019 regulations.

As with the proposed rule, we are applying the 2019 regulations for this final rule because the 2019 regulations are the governing law just as they were when we completed the proposed rule. Although there was a period in the interim—between July 5, 2022, and September 21, 2022—when the 2019 regulations became vacated and the pre-2019 regulations therefore governed, the 2019 regulations are now in effect and govern listing and critical habitat decisions (*see Center for Biological Diversity v. Haaland*, No. 4:19-cv-05206-JST, Doc. 168 (N.D. Cal. July 5, 2022) (CBD v. Haaland) (vacating the 2019 regulations and thereby reinstating the pre-2019 regulations)); *In re: Cattlemen's Ass'n*, No. 22-70194 (9th Cir. Sept. 21, 2022) (staying the district court's order vacating the 2019 regulations until the district court resolved a pending motion to amend the order); *Center for Biological Diversity v. Haaland*, No.

4:19-cv-5206-JST, Doc. Nos. 197, 198 (N.D. Cal. Nov. 16, 2022) (granting plaintiffs’ motion to amend July 5, 2022 order and granting government’s motion for remand without vacatur). We have undertaken an analysis under the pre-2019 regulations and included it in the decision file for this final rule.

The Act defines an “endangered species” as a species that is in danger of extinction throughout all or a significant portion of its range, and a “threatened species” as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species’ continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects.

We use the term “threat” to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term “threat” includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term “threat” may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an “endangered species” or a “threatened species.” In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species, such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an “endangered species” or a “threatened species” only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term “foreseeable future,” which appears in the statutory definition of “threatened species.” Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term “foreseeable future” extends only so far into the future as we can reasonably determine that both the future threats and the species’ responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. “Reliable” does not mean “certain”; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define the foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species’ likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species’ biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Analytical Framework

The frecklebelly madtom (*Noturus munitus*) SSA report documents the results of our comprehensive biological status review for the frecklebelly madtom species as a whole, including an assessment of the potential stressors to the species (Service 2020, entire). The SSA report does not represent our decision on whether the species (or the DPS) should be listed as an endangered or threatened species under the Act. However, it does provide the scientific basis that informs our regulatory decisions, which involve the further application of standards within the Act and its implementing regulations and policies. The following is a summary of the key results and conclusions from the SSA report, specifically related to the DPS; the full SSA report can be found at <https://www.fws.gov/office/alabama-ecological-services/library> and at <https://www.regulations.gov> under Docket No. FWS-R4-ES-2020-0058.

To assess the frecklebelly madtom's viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the species to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the species to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a species is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the species' ecological requirements for survival and reproduction at the individual, population, and species levels, and described the beneficial and risk factors influencing the species' viability.

The SSA process can be categorized into three sequential stages. During the first stage, we evaluated the individual species' life-history needs. The next stage involved an assessment of the historical and current condition of the species' demographics and habitat characteristics,

including an explanation of how the species arrived at its current condition. The final stage of the SSA involved making predictions about the species' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a species to sustain populations in the wild over time. We use this information to inform our regulatory decision.

Summary of Biological Status and Threats

In this discussion, we review the species needs, the biological condition of the Upper Coosa River DPS of frecklebelly madtom and its resources, and the threats that influence the current and future condition, in order to assess the overall viability and the risks to the viability of the Upper Coosa River DPS of frecklebelly madtom.

Species Needs and Habitat

Primary habitat for frecklebelly madtom is associated with fast moving streams often associated with rivers and their tributaries, with substrate consisting of various sizes of gravel (Suttkus and Taylor 1965, pp. 177-178; Mettee *et al.* 1996, p. 409; Vincent, 2019, unpaginated). Cover is an important habitat factor for the species, as it provides for concealment against predators (Vincent, 2019, unpaginated), foraging habitat, and nesting habitat. Areas providing firm gravel substrates, such as small pebbles and rocks, are preferred, thus muddy waterway sand still streams are not desirable habitat for this species (Suttkus and Taylor 1965, pp. 177; Taylor 1969, pp. 183; Mettee *et al.* 1996, p. 409; Piller *et al.* 2004, p. 1004).

Delineating Representation and Resilience Units

We delineated representation units to describe the breadth of known genetic, phenotypic, and ecological diversity within the species. There is evidence of differentiation in habitat use, morphology, and genetics for areas that the frecklebelly madtom occupies, which are disconnected spatially across the landscape. In total, we identified six representation units for the frecklebelly madtom: Pearl River (A), upper Tombigbee River (B), lower Tombigbee/Alabama Rivers (C), Alabama River (D), Cahaba River (E), and upper Coosa River (F). Through the DPS

analysis described in the proposed rule (85 FR 74050; November 19, 2020), we determined that the Upper Coosa River representation unit is a distinct population segment (see figure 1, below) and that the DPS meets the Act's definition of a threatened species. Any reference to the upper Coosa River representation unit in the SSA report can be understood to mean the Upper Coosa River DPS of frecklebelly madtom. The term upper Coosa River representation unit is used throughout this document (and the SSA report) but references the same geographic areas as the Upper Coosa River DPS of frecklebelly madtom.

Frecklebelly Madtom (*Noturus munitus*) Distinct Population Segment Map

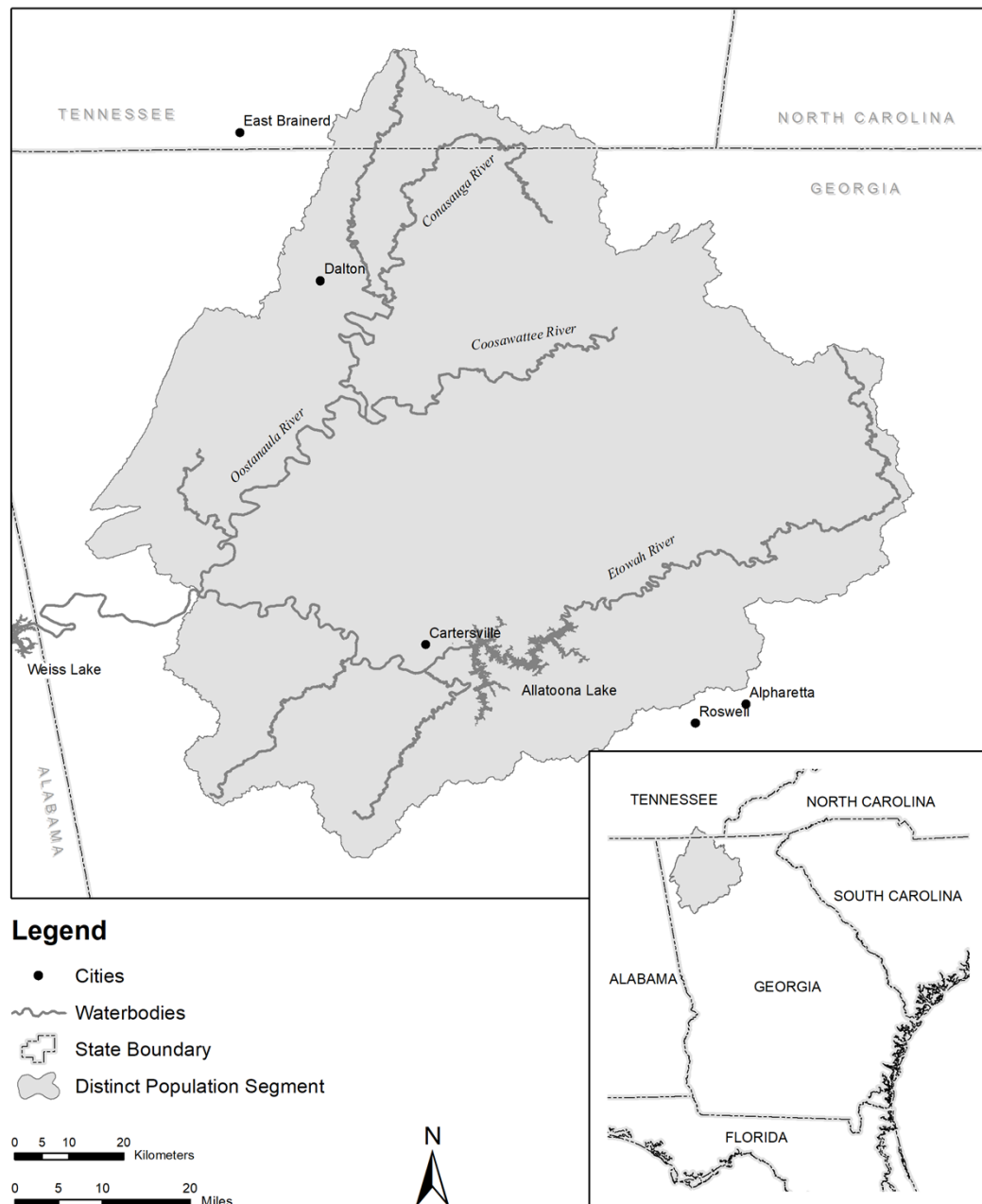


Figure 1. Rivers and streams within the Upper Coosa River DPS of the frecklebelly madtom.

We delineated resilience units for the upper Coosa River representation unit of the frecklebelly madtom (see table 1, below). Resilience units were delineated to describe at a local scale how the species withstands stochastic events. Resilience units were delineated as

aggregations of adjacent U.S. Geological Survey Hydrological Unit Code (HUC) 10 watershed boundaries that contain a frecklebelly madtom observation and are not disconnected by dams or other major habitat alterations that may present a barrier to movement. By using HUC 10 watersheds, we are able to delineate resilience units that can be measured and evaluated at a local scale similar to that we would expect for a population. We identified three resilience units consisting of eight HUC 10 watersheds within the range of the Upper Coosa River DPS of frecklebelly madtom (see table 1, below).

Table 1—Representation Unit and Resilience Units Used to Assess Viability of the Upper Coosa River DPS of Frecklebelly Madtom.

Representation Unit	Resilience Units
Upper Coosa River	Conasauga River
	Coosawattee River
	Etowah River

Risk Factors for Upper Coosa River DPS of Frecklebelly Madtom

We reviewed the potential risk factors (see discussion of section 4(a)(1) of the Act, above) that are affecting the frecklebelly madtom now and are expected to affect it into the future. We have determined that habitat destruction and degradation caused by agriculture and development, resulting in poor water quality (Factor A), poses the largest risk to the current and future viability of the Upper Coosa River DPS of frecklebelly madtom. Other potential stressors to the species are habitat degradation resulting from channelization, dams, and impoundments (Factor A) and climate change (Factor E). We find the species does not face significant threats from overutilization (Factor B), disease or predation (Factor C), or invasive species (Factor E). We also reviewed the regulatory mechanisms (Factor D) and conservation efforts being undertaken for the habitat in which the frecklebelly madtom occurs. A brief summary of relevant stressors is presented below; for a full description, refer to chapter 4 of the SSA report (Service 2020, entire).

Water Quality

The frecklebelly madtom, like other benthic aquatic species, is sensitive to poor water quality (Warren *et al.* 1997, p. 125) and needs clean, flowing water to survive; thus, water quality degradation is considered a threat to the species. Changes in water chemistry and flow patterns, resulting in a decrease in water quality and quantity, have detrimental effects on madtoms because they can render aquatic habitat unsuitable for occupancy.

Inputs of point (discharge from particular pipes) and nonpoint (diffuse land surface runoff) source pollution across the DPS's range are numerous and widespread. Point source pollution can be generated from inadequately treated effluent from industrial plants, sanitary landfills, sewage treatment plants, active surface mining, drain fields from individual private homes, and others (Service 2000, pp. 14–15). Nonpoint pollution originates from agricultural activities, poultry and cattle feedlots, abandoned mine runoff, construction, failing septic tanks, and contaminated runoff from urban areas (Deutsch *et al.* 1990, entire; Service 2000, pp. 14–15). These sources contribute pollution to streams via sediments, heavy metals, fertilizers, herbicides, pesticides, animal wastes, septic tank and gray water leakage, and oils and greases. Water quality and native aquatic fauna decline as a result of this pollution through nitrification, decreases in dissolved oxygen concentration, increases in acidity and conductivity, or direct introduction of toxicants. These alterations likely have direct (*e.g.*, decreased survival and/or reproduction) and indirect (*e.g.*, loss, degradation, and fragmentation of habitat) effects. For some aquatic species, including the frecklebelly madtom, submergent vegetation provides critical spawning habitat for adults, refugia from predators, and habitat for prey of all life stages (Jude and Pappas 1992, pp. 666–667; Freeman *et al.* 2003, p. 54). Degraded water quality and the high algal biomass that result from pollutant inputs cause loss of these critical submergent plant species (Chow–Fraser *et al.* 1998, pp. 38–39) that are vital habitat for the frecklebelly madtom.

The frecklebelly madtom is intolerant to sedimentation (Shepard 2004, p. 221; MMNS 2014, p. 35), and sedimentation is a concern throughout the Upper Coosa River DPS. Researchers have documented a negative relationship between occurrence of the frecklebelly

madtom and human-induced increases of sediment within Etowah River and Conasauga River (Burkhead *et al.* 1997, pp. 406–413; Shepard *et al.* 1997, pp. 15–19; Freeman *et al.* 2002, pp. 18–19; Freeman *et al.* 2017, pp. 429–430). Human-induced increases in sediment are likely a factor in local declines of the species. In addition, the frecklebelly madtom's habitat requirements make it vulnerable to activities that disturb substrate integrity. The species is restricted to habitat with pea-sized gravel, cobble, or slab-rock substrates not embedded in large amounts of silt (Bennett *et al.* 2008, p. 467; Bennett and Kuhajda 2010, p. 510), although it has also been found to occupy some stable streams with a sandy yet stable substrate. Degradation from sedimentation, physical habitat disturbance, and contaminants threaten the habitat and water quality on which the frecklebelly madtom depends. Sedimentation from an array of land uses (*e.g.*, urbanization, agriculture, channel maintenance activities) could negatively affect the species by reducing growth rates, disease tolerance, and gill function; reducing spawning habitat, reproductive success, and egg (embryo), larva, and juvenile development; reducing food availability through reductions in prey; reducing foraging efficiency; and reducing shelter.

A wide range of current activities and land uses, including agricultural practices, construction, stormwater runoff, unpaved roads, poor forest management, utility crossings, and mining, can lead to excessive sedimentation within streams. Fine sediments not only smother streams during current ongoing activities, historical land-use practices may have substantially altered hydrological and geological processes such that sediments continue to be input into streams for several decades after those activities cease (Harding *et al.* 1998, p. 14846).

Water quality for frecklebelly madtom is particularly impacted by three processes: channel modification (*i.e.*, dredging and channelization), agriculture, and development, which are discussed further below.

Channel Modification

Dredging and channelization have led to loss of aquatic habitat in the Southeast (Neves *et al.* 1997, p. 71). Dredging and channelization projects are extensive throughout the region for

flood control, navigation, sand and gravel mining, and conversion of wetlands into croplands (Neves *et al.* 1997, p. 71; Herrig and Shute 2002, pp. 542–543). Dredging and channelization modify and destroy habitat for aquatic species by destabilizing the substrate, increasing erosion and siltation, removing woody debris, decreasing habitat heterogeneity, and stirring up contaminants that settle onto the substrate (Williams *et al.* 1993, pp. 7–8; Buckner *et al.* 2002, entire; Bennett *et al.* 2008, pp. 467–468). Channelization can also lead to head cutting (an erosional process in a stream channel with a vertical cut or drop that migrates upstream over time), which causes further erosion and sedimentation (Hartfield 1993, pp. 131–141). Dredging can involve snagging (the removal of woody debris from the channel), which not only contributes to destabilization of the channel but also removes the woody debris that provides important cover and nest locations for many fish species, including the frecklebelly madtom (Bennett *et al.* 2008, pp. 467–468).

Within the range of the Upper Coosa River DPS, important habitat of the frecklebelly madtom was permanently altered and removed by the U.S. Army Corps of Engineers when it was appropriated funding by Congress to remove obstructions from the Oostanaula and Coosawattee rivers in the 1870s (U.S. Department of War Office of Engineers 1875, pp. 792–794). However, the Conasauga River does not have large-scale human modification through damming or channelization (Bennett *et al.* 2008, p. 468), and the Etowah upstream of Allatoona River is relatively unaltered by dredging or channel modification work.

Agriculture

Agricultural practices such as traditional farming, feedlot operations, and associated land use practices can contribute pollutants to rivers. These practices can also degrade habitat by eroding stream banks, which results in alterations to stream hydrology and geomorphology. Nutrients, bacteria, pesticides, and other organic compounds are generally found in higher concentrations in agricultural areas rather than forested areas. Contaminants associated with agriculture (*e.g.*, fertilizers, pesticides, herbicides, and animal waste) can degrade water quality

and negatively impact instream habitats by causing oxygen deficiencies, excess nitrification, and excessive algal growths, which can have a direct impact on fish community composition (Petersen *et al.* 1999, p. 6).

Areas within the current range of the Upper Coosa River DPS of frecklebelly madtom, which are predominantly agricultural, are impacted by nonpoint source sediment and agrochemical discharges altering the physical and chemical characteristics of the DPS's habitat, thus potentially impeding the frecklebelly madtom's ability to feed, seek shelter from predators, and successfully reproduce. A negative relationship between the species and nonpoint source stressors attributed to agriculture has been described particularly within the Conasauga River (Freeman *et al.* 2017, pp. 429–430). Over the past two decades, an increase in the use of agricultural chemicals and practices, such as use of glyphosate-based herbicides for weed control and land dispersion of animal waste for soil amendment, has corresponded with marked declines in populations of fish and mussel species in the Upper Conasauga River watershed in Georgia and Tennessee (Freeman *et al.* 2017, p. 429). Nutrient enrichment of streams was found to be widespread, with high levels of nitrate and phosphorus (reported at over 5 milligrams per liter and over 300 micrograms per liter, respectively, within the Conasauga River) likely associated with eutrophication, and hormone concentrations in sediments were often above those shown to cause endocrine disruption in fish, which was possibly related to the widespread application of poultry litter and manure (Lasier *et al.* 2016, entire). Estrogens, a hormone and type of endocrine disruptor that can be found in poultry litter, also have been identified as a threat to aquatic fauna in the Conasauga River system (Jacobs 2015, entire). Increased levels of estrogens can lead to decreases in spawning success and potentially population collapse within short timeframes (Kidd *et al.* 2007, p. 8899). Aquatic species declines observed in the Conasauga watershed may be at least partially due to hormones, as well as excess nutrients, herbicides, and surfactants (Freeman *et al.* 2017, p. 429).

The amount (acreage) of agricultural land is declining across the eastern United States with a net loss of 6.5 percent between 1973 and 2000 (Sayler *et al.* 2016, p. 12). As discussed below under *Future Scenarios*, within the Upper Coosa River watershed, the declining trend of agricultural land is consistent with broader trends in the eastern United States showing agricultural land declines with time (Sayler *et al.* 2016, p. 12). These agricultural lands are mostly being converted to developed and forested lands (Sayler *et al.* 2016, p. 12). Despite the declining trend, agricultural practices leading to poor water quality conditions currently influence and will continue to influence the viability of frecklebelly madtom within the Upper Coosa River DPS.

Development

Development is a significant source of water quality degradation that can reduce the survival of aquatic organisms, including the frecklebelly madtom. Urban development can stress aquatic systems in a variety of ways, including increasing the frequency and magnitude of high flows in streams; increasing sedimentation and nutrient loads; increasing contaminants and toxicity; decreasing the diversity of fish, aquatic insects, plants, and amphibians; and changing stream morphology and water chemistry (Coles *et al.* 2012, entire; CWP 2003; entire). Sources and risks of an acute or catastrophic contamination event, such as a leak from an underground storage tank or a hazardous materials spill on a highway, increase as urbanization increases.

Urbanization has also been shown to impair stream quality by impacting riparian health (Diamond *et al.* 2002, p. 1150). Riparian impairment resulting from urbanization or agricultural land use can amplify negative effects of nonpoint source pollution within the watershed as well as impact stream quality independent of land use within the watershed. Impacts from impervious cover can be mitigated through riparian forest cover and good riparian health (Roy *et al.* 2005, p. 2318; Walsh *et al.* 2007, entire); however, the benefit of the riparian cover diminishes when impervious cover (*i.e.*, urban cover) exceeds approximately 10 percent within the watershed (Booth and Jackson 1997, p. 1084; Goetz *et al.* 2003, p. 205).

Currently, larger population centers, such as the city of Atlanta, Georgia, contribute substantial runoff to the watersheds occupied by the Upper Coosa River DPS of frecklebelly madtom. In the future, urbanization is predicted to increase within the Upper Coosa River DPS of frecklebelly madtom (see *Future Scenarios*, below). The Etowah River watershed, upstream of Lake Allatoona in Georgia, is expected to experience additional urbanization (Albanese *et al.* 2018, p. 39). Conservation concerns in the Etowah River watershed have focused on potential effects of this predicted urban growth on imperiled fishes (Burkhead *et al.* 1997, pp. 959–968; Wenger *et al.* 2010, pp. 11–21), and previous analyses show negative correlations between occurrence of native fishes and increases in impervious cover associated with urban development (Wenger *et al.* 2008, p. 1260). In the Etowah Basin in Georgia, models indicated that urbanization lowered the richness and density of fish species and led to predictable changes in species composition. Darters, sculpin, minnows, and endemic species declined along the urban gradient, whereas sunfishes persisted and became the dominant group (Walters *et al.* 2005, pp. 10–11). In the future, we anticipate increased development to amplify as a population-level factor influencing the viability of frecklebelly madtom within the Upper Coosa River DPS.

Impoundments

Impoundment of rivers is a stressor to aquatic species in the Southeast (Benz and Collins 1997, pp. 22–23, 63, 91, 205, 273, 291, 397, 399, 401–406, 446; Buckner *et al.* 2002, pp. 10–11). Dams modify habitat conditions and aquatic communities both upstream and downstream of an impoundment (Winston *et al.* 1991, pp. 103–104; Mulholland and Lenat 1992, pp. 193–231; Soballe *et al.* 1992, pp. 421–474). Upstream of dams, habitat is flooded, and in-channel conditions change from flowing to still water, with increased depth, decreased levels of dissolved oxygen, and increased sedimentation. Sedimentation alters substrate conditions by filling in interstitial spaces between rocks, which provide habitat for many species (Neves *et al.* 1997, pp. 63–64), including the frecklebelly madtom. Downstream of dams, flow regime fluctuates with resulting fluctuations in water temperature and dissolved oxygen levels, the substrate is scoured,

and downstream tributaries are eroded (Neves *et al.* 1997, pp. 63–64; Schuster 1997, p. 273; Buckner *et al.* 2002, p. 11). Negative “tailwater” effects on habitat can extend many kilometers downstream (Neves *et al.* 1997, p. 63). Dams fragment habitat for aquatic species by blocking corridors for migration and dispersal, resulting in population isolation and heightened susceptibility to extinction (Neves *et al.* 1997, p. 63). Dams also preclude the ability of aquatic organisms to escape from polluted waters and accidental spills (Buckner *et al.* 2002, p. 10).

Damming of streams and springs is also extensive throughout the Southeast and occurs within the large river habitats of the Upper Coosa River DPS of frecklebelly madtom, specifically Allatoona Dam on the Etowah River and Carters Dam on the Coosawattee River (Etnier 1997, pp. 88–89; Morse *et al.* 1997, pp. 22–23; Shute *et al.* 1997, pp. 458–459; Bennett *et al.* 2008, p. 467). Many streams have both small ponds in their headwaters and large reservoirs in their lower reaches (Morse *et al.* 1997, p. 23). Small streams on private lands are regularly dammed to create ponds for cattle, irrigation, recreation, and fishing, with significant ecological effects due to the sheer abundance of these structures (Morse *et al.* 1997, pp. 22–23). In addition, small headwater streams are increasingly being dammed in the Southeast to supply water for municipalities (Buckner *et al.* 2002, p. 11).

Dams are known to have caused the extirpation and extinction of many southeastern species, and existing and proposed dams pose an ongoing threat to many aquatic species (Folkerts 1997, p. 11; Neves *et al.* 1997, p. 63; Ricciardi and Rasmussen 1999, p. 1222; Service 2000, p. 15; Buckner *et al.* 2002, p. 11; Olden 2016, pp. 112–122), including the frecklebelly madtom. For instance, the construction of 10 lock and dam structures on the Tenn-Tom Waterway, which artificially connects the Tennessee River to the Gulf of Mexico, led to the extirpation of many species, including the frecklebelly madtom, from the main river channel (Bennett *et al.* 2008, p. 467). The construction of one dam on the Etowah River may have affected the Upper Coosa River DPS of frecklebelly madtom and reduced the extent of available

habitat, since the species is dependent on large-river gravel shoal substrate (Bennett *et al.* 2008, p. 470).

Climate Change

In the southeastern United States, several climate change models have projected more frequent drought, more extreme heat (resulting in increases in air and water temperatures), increased heavy precipitation events (*e.g.*, flooding), more intense storms (*e.g.*, frequency of major hurricanes increases), and rising sea level and accompanying storm surge (IPCC 2013, entire). When taking into account future climate projections for temperature and precipitation where the frecklebelly madtom occurs, warming is expected to be greatest in the summer, which is predicted to increase drought frequency. Nevertheless, annual mean precipitation is expected to increase slightly, leading to a slight increase in flooding events (Alder and Hostetler 2013, unpaginated; IPCC 2013, entire; USGS 2020, unpaginated). Changes in climate may affect ecosystem processes and communities by altering the abiotic conditions experienced by biotic assemblages, resulting in potential effects on community composition and individual species interactions (DeWan *et al.* 2010, p. 7).

The frequency, duration, and intensity of droughts are likely to increase in the southeastern United States as a result of global climate change (Konrad *et al.* 2013, p. 34), which could negatively affect stream flows in the region. Stream flow is strongly correlated with important physical and chemical parameters that limit the distribution and abundance of riverine species (Power *et al.* 1995, entire; Resh *et al.* 1988, pp. 438–439) and regulates the ecological integrity of flowing water systems (Poff *et al.* 1997, p. 770).

To understand how climate change is projected to affect areas where frecklebelly madtom occurs, we used the National Climate Change Viewer (NCCV), a climate-visualization tool developed by the U.S. Geological Survey (USGS), to generate future climate projections across the range of the species. The NCCV is a web-based tool for visualizing and assessing projected changes in climate and water balance at watershed, State, and county scales (USGS 2020,

unpaginated). To evaluate the effects of climate change in the future, we used projections from representative concentration pathway (RCP) 4.5 and RCP 8.5 to characterize projected future changes in climate and water resources, averaged for the South-Atlantic Gulf Region encompassing the Upper Coosa River DPS of the frecklebelly madtom (Service 2020, pp. 27–31). The projections estimate changes in mean annual values for maximum air temperature, minimum air temperature, monthly precipitation, and monthly runoff, among other factors, from historical (1981–2010) to future (2050–2074) time series.

Within the Upper Coosa River DPS of the frecklebelly madtom, the NCCV projects that, under the RCP 4.5 scenario, maximum air temperature will increase by 1.9 degrees Celsius (°C) (3.4 degrees Fahrenheit (°F)), minimum air temperature will increase by 1.8 °C (3.2 °F), precipitation will increase by 5.36 millimeters (0.2 inches) per month, and runoff will remain the same in the 2050–2074 time period (USGS 2020, unpaginated). Under the more extreme RCP 8.5 scenario, the NCCV projects that maximum air temperature will increase by 2.8 °C (5 °F), minimum air temperature will increase by 2.7 °C (4.9 °F), precipitation will increase by 5.36 millimeters (0.2 inches) per month, and runoff will remain the same in the 2050–2074 time period (USGS 2020, unpaginated). These estimates indicate that, despite projected minimal increases in annual precipitation, anticipated increases in maximum and minimum air temperatures will likely offset those gains. Based on these projections, the frecklebelly madtom will on average be exposed to increased air temperatures in the Upper Coosa River watershed, despite limited increases in precipitation; however, these projections are not a one-to-one air to stream water temperature comparison.

Despite the recognition of climate effects on ecosystem processes, there is uncertainty within each model and model ensembles about what the exact climate future will be, and there is uncertainty in how the ecosystems and species will respond. Although there are several potential risks associated with long-term climate change as described above, there is uncertainty regarding how the frecklebelly madtom will respond to these risks. The species occupies some tributaries

throughout its range, but the frecklebelly madtom has a preference for habitat in larger rivers and this may provide a buffer to changes induced by climate change, particularly from issues associated with drought. Therefore, we do not consider climate change to be a primary risk factor for the species at this time.

Methods to Assess Current Condition

We assessed the current resiliency (ability of populations to withstand stochastic events) within the Upper Coosa River DPS of frecklebelly madtom by considering occurrence data throughout the DPS's range. We used occurrence data to estimate range extent and range geometry (*i.e.*, number of named streams with occurrences). These metrics can be useful for evaluating resiliency, as larger areas of occupied habitat and multiple occupied streams (more complex ranges) are more robust to stochastic events (*i.e.*, a single, more localized event would be unlikely to negatively affect the entire population or unit if many and larger reaches of streams were occupied). We categorized current resiliency into high, moderate, low, or likely extirpated conditions, based on our evaluation of total number of occurrences, the number of occupied stream reaches, the length of discrete stream reaches, and an estimate of the maximum occupied stream reach within each resilience unit, in addition to information within available literature (Service 2020, pp. 34–53).

Environmental DNA (eDNA, which is DNA that is shed into the environment by an organism during its life) belonging to the frecklebelly madtom was collected in all three resilience units of the Upper Coosa River DPS (Freeman and Bumpers 2018, entire). Within the Coosawattee River, eDNA is the only evidence of the species' presence within the period of record (1950–2019). Collecting and analyzing water samples for eDNA provides a means of rapidly surveying aquatic habitats to help identify potentially occupied sites for a species. However, uncertainty of these data remains regarding the origin and fate of the individuals that shed the DNA and the length of time the eDNA persists in the environment. For the purposes of this analysis, we used eDNA data as evidence to support our conclusion that the probability of

the species being present in a particular unit is greater than zero. As described above, we used occurrence data to assess resiliency. If units are known only from eDNA data, an unknown resiliency was determined since we have no occurrence information from traditional surveys.

Representation for the Upper Coosa River DPS of the frecklebelly madtom is assessed as the number and ecological setting of populations or resilience units, with resilience units of moderate or high providing greater contribution to the overall representation. Representation of the Upper Coosa River DPS is assessed as low since only the Etowah River meaningfully contributes to this attribute. A full description of the results can be found in our proposed listing rule for the Upper Coosa River DPS of the frecklebelly madtom (85 FR 74050; November 19, 2020). Similarly, we assessed redundancy (ability of species to withstand catastrophic events) by evaluating the number and distribution of populations or resilience units, with resilience units of moderate or high providing greater contribution to the overall redundancy throughout the DPS's range. Similar to representation, redundancy of the DPS is also assessed as low since only the Etowah River meaningfully contributes to this attribute. Results can be found in our November 19, 2020, proposed rule.

Current Condition of the Upper Coosa River DPS of Frecklebelly Madtom

The known historical range for the Upper Coosa River DPS of frecklebelly madtom includes the Etowah River in northern Georgia and the Conasauga River in northern Georgia and southeastern Tennessee. Currently, within the upper Coosa River representation unit, one resilience unit (Conasauga River) was estimated to have low resiliency, one to have moderate resiliency (Etowah River), and one to have unknown resiliency (Coosawattee River).

In the Conasauga River, the number of occurrences, occupied reaches, and occupied reach length has declined drastically in the Conasauga River. Additionally, no tributaries are known to support this species. This drastic decline has been noted since the late 1990s (Shepard *et al.* 1997, p. 22) and supported by current occupancy modeling effort (Freeman *et al.* 2017, p. 424). Further, fish assemblage and abundance from the 1990s–2000s documented declines in

several fish species, including the frecklebelly madtom, and after 2000, the frecklebelly madtom was no longer detected in surveys (Freeman *et al.* 2003, pp. 569–570; Bennett *et al.* 2008, p. 466). These surveys indicate a reduced resiliency in the Conasauga River, because the best available occurrence data present a transition from a measurable population of the frecklebelly madtom to an unmeasurable one. Despite a 20-year lapse since the last observation of the frecklebelly madtom, the current presence of the species in the Conasauga River is supported by eDNA that was collected in 2017 and 2018 (Freeman and Bumpers 2018, entire), as described above. Furthermore, the Conasauga River has not experienced the same type of habitat modifications as other rivers that have caused localized extirpation of the species (dams, impoundments, and channelization), and the species has been observed more recently in river surveys than in river sections where it is considered extirpated. Therefore, we determined that the species remains present in the Conasauga River but with low resiliency to stochastic events, as estimated from the occurrence data. The number of occurrences of frecklebelly madtom appears to have declined in the Etowah River from the 1998-2008 time period as has the number of occupied stream reaches and their total length. However, a concerted fish survey effort was in progress during 1998-2008 time period in the upper Coosa River watershed (Freeman *et al.* 2003, entire). Therefore, while there are fewer occurrences of the frecklebelly madtom in the current time period, we cannot determine that this represents a decline in the species or a decline in effort in the Etowah River. Based on recent work that quantified occupancy of frecklebelly madtom and found it to be relatively consistent in the Etowah River (Freeman *et al.* 2017, p. 428), it is reasonable to conclude that the species' populations have been stable. The frecklebelly madtom is largely confined to the main stem of the Etowah River. However, some of the highest quality habitat for the frecklebelly madtom in this river can be found flowing through the Dawson Forest Wildlife Management Area (Shepard *et al.* 1997, p. 21), a state managed property. Approximately 19 km of the Etowah River flows through or is adjacent (at least one river bank) to property owned by the GADNR, which represents approximately 19% of the

maximum known range extent of the frecklebelly madtom in the Etowah River. Therefore, this river system is believed to currently be afforded some protection from encroaching developments. Due to the apparent stability of the range extent in this unit but historically low abundances (Bennett *et al.* 2008, p. 465), its relatively simple range geometry, and exposure to threats from development, this unit was assessed as having moderate resilience. No occurrence data is available for the Coosawattee River unit. However, environmental DNA for the frecklebelly madtom was found in portions of it. In the Coosawattee River, there were 5 positive environmental DNA assays, and occupancy probability was estimated as 0.49-0.99 (Figure 5.9; Freeman and Bumpers 2018, p. 9). Due to the lack of observations in this watershed and a history of alteration from dams and channelization, we consider it to have an unknown resiliency.

Regulatory Mechanisms and Conservation Efforts

The frecklebelly madtom is recognized as a species of concern in all States where it occurs and is protected by State statute in four States where it occurs. This species is listed as endangered by the State of Georgia (GADNR 2015, p. 74) and threatened by the State of Tennessee (TWRA 2015, appendix C). In general, the protections provided to the frecklebelly madtom by Georgia and Tennessee prohibit direct exploitation of the species without a permit within those States.

Beginning in 2017, the Private John Allen National Fish Hatchery partnered with the Mississippi Department of Wildlife Fisheries and Parks to collect individuals of frecklebelly madtom within that State to study marking techniques, establish captive husbandry methods, and conduct life-history studies. This effort has led to successful propagation of the species, documented important components of the species' life history, and collected data that can be used to develop long-term, captive-propagation efforts, although no individuals have been released. While the efforts occur outside of the range of the Upper Coosa River DPS of

frecklebelly madtom, species propagation efforts may be beneficial to the conservation of the DPS.

Throughout the range of the species, portions of occupied rivers and surrounding lands are owned and managed by State and Federal entities that prioritize conservation as a management objective. Generally, these entities help to maintain the natural ecosystem functioning of a river by managing terrestrial areas in a more natural state and limiting disturbance adjacent to rivers. However, properties managed by the U.S. Forest Service, and the Dawson Forest Wildlife Management Area (WMA) managed by the Georgia Department of Natural Resources, are known to specifically consider and manage for the conservation of aquatic species and their habitats. It is expected that the Upper Coosa River DPS of frecklebelly madtom will be positively affected by management on these lands. These conservation lands and the adjacent rivers occupied by the Upper Coosa River DPS of frecklebelly madtom include portions of the Conasauga River within the Cherokee National Forest (U.S. Department of Agriculture (USDA) U.S. Forest Service) in Georgia, and portions of the Etowah River within the Dawson Forest WMA (Georgia Department of Natural Resources) in Georgia. In addition, the Etowah River catchment area upstream of habitat occupied by the frecklebelly madtom and managed by the Chattahoochee-Oconee National Forest (USDA U.S. Forest Service) is expected to benefit the species by providing good water quality to lower river reaches.

The Natural Resources Conservation Service (NRCS), USDA, designated the Conasauga River as a Working Lands for Wildlife (WLFW) landscape in 2017 (USDA 2023, unpaginated), and will provide additional funds and workforce to improve water quality and aquatic habitat in the watershed. The project will provide technical and financial assistance to help landowners improve water quality and help producers plan and implement a variety of conservation activities or practices that benefit aquatic species. The Upper Coosa River DPS of frecklebelly madtom will likely benefit from water quality improvements in portions of the Conasauga River that are affected by agricultural practices implemented through the WLFW project.

Synergistic and Cumulative Effects

We note that, by using the SSA framework to guide our analysis of the scientific information documented in the SSA report, we have not only analyzed individual effects on the species, but we have also analyzed their potential cumulative effects. We incorporate the cumulative effects into our SSA analysis when we characterize the current and future condition of the species. To assess the current and future condition of the species, we undertake an iterative analysis that encompasses and incorporates the threats individually and then accumulates and evaluates the effects of all the factors that may be influencing the species, including threats and conservation efforts. Because the SSA framework considers not just the presence of the factors, but to what degree they collectively influence risk to the entire species, our assessment integrates the cumulative effects of the factors and replaces a standalone cumulative effects analysis.

In addition to impacting frecklebelly madtom individually, it is possible that several of the risk factors summarized above are acting synergistically or cumulatively on the DPS. The combined impact of multiple stressors is likely more harmful than a single stressor acting alone. The dual stressors of climate change and direct human impact have the potential to affect aquatic ecosystems by altering stream flows and nutrient cycles, eliminating habitats, and changing community structure (Moore *et al.* 1997, p. 942). Increased water temperatures and a reduction in stream flow are the climate change effects that are most likely to affect stream communities (Poff *et al.* 1997, entire), and each of these variables is strongly influenced by land use patterns. For example, in agricultural areas, lower precipitation may trigger increased irrigation, resulting in reduced stream flow (Hatfield *et al.* 2008, pp. 41–43). In forested areas, trees influence instream temperatures through the direct effects of shading. Reductions in temperature by vegetative cover may be particularly important in low-order streams, where canopy vegetation significantly reduces the magnitude and variation of the stream temperature compared with that of clear-cut areas (Ringler and Hall 1975, pp. 111–121).

Future Scenarios

To evaluate the future viability of the frecklebelly madtom and address uncertainty associated with the degree and extent of potential future stressors and their impacts to the madtom, we analyzed three future scenarios and assessed the resiliency, representation, and redundancy of the madtom for each scenario. We devised these scenarios by identifying information on the following primary threats that are anticipated to affect the frecklebelly madtom in the future: agriculture and developed land use. A full description of the results can be found in our proposed listing rule for the Upper Coosa River DPS of the frecklebelly madtom (85 FR 74050; November 19, 2020).

We considered projected changes in agricultural and developed land uses in assessing future resiliency of each resilience unit for the Upper Coosa River DPS of frecklebelly madtom. We assessed these land uses to understand the future impacts to habitat degradation and destruction resulting from poor water quality, a primary threat to the Upper Coosa River DPS of frecklebelly madtom. The three scenarios capture the range of variability in the changing human population footprint on the landscape and how frecklebelly madtom populations will respond to these changing conditions. All three scenarios were projected out to the year 2050 (*i.e.*, 30 years), because we have good confidence in our ability to forecast patterns in land-use change and understand how these land uses will interact with the frecklebelly madtom and its habitat over this time period given the species' life span.

In our development of future scenarios, we used projected trends in land use change from two models, the National Land Cover Database (NLCD) and the Slope, Land use, Excluded, Urban, Transportation and Hillshade (SLEUTH) model (Jantz *et al.* 2010, entire). Future projections for agricultural land use were developed from NLCD data by calculating a 15-year trend in agricultural land use change between 2001 and 2016 for each resilience unit and converting that to an annual rate of agricultural land use change for each resilience unit. We used the annual rate of agricultural land use change to project changes to 30 years from the present. The annual rate of agricultural land use change was held constant for each resilience unit across

all scenarios; however, the rate of change in agricultural area varied among the resilience units we evaluated in our analysis. We found an overall decline in the amount of land used for agriculture in the Upper Coosa River watershed. This result is consistent with broader trends that show the amount of agricultural land is declining with time in the eastern United States (Sayler *et al.* 2016, p. 12).

For our future developed land use projections, we used the SLEUTH datasets from the year 2050 (closest to 30 years in the future) and examined development across resilience units. We then developed three scenarios that varied development probabilities: (1) low development, (2) moderate development, and (3) high development. For the low development scenario, we considered all areas predicted to be developed at a greater than 90 percent probability (*i.e.*, only including areas that are almost certain to be developed, and therefore including the least amount of total area to be developed); the moderate development scenario considered all areas to be developed at a greater than 50 percent probability; and the high development scenario considered all areas to be developed at a greater than 10 percent probability (*i.e.*, including the majority of areas with any potential to be developed, and therefore the most amount of area to be developed). The results of the future projections for agriculture and developed land use were used to estimate a composite land use score, and then using a rule set, we categorized future resiliency into high, moderate, low, unknown, or likely extirpated conditions.

In the low development scenario (Scenario 1), the Upper Coosa River DPS of frecklebelly madtom was projected to have one unit with moderate resiliency, one unit with low resiliency, and one unit with unknown resiliency (see table 2, below). In terms of projected change from current condition, the Etowah River resilience unit is projected to become more developed, although the percent of developed land does not reach a point where a change in resiliency is anticipated. All other units are projected to retain their current resiliency under the low development scenario.

Table 2—Future Resiliency of the Upper Coosa River DPS of Frecklebelly Madtom Resilience Units under Three Future Scenarios.

Representation Units	Resilience Units	Current	Scenario 1	Scenario 2	Scenario 3
Upper Coosa River (F)	Conasauga River (F1)	Low	Low	Low	Likely Extirpated
	Coosawattee River (F2)	Unknown*	Unknown*	Unknown*	Unknown*
	Etowah River (F3)	Moderate	Moderate	Low	Low

* Resiliency determined as unknown since units are known only from eDNA data.

In the moderate development scenario (Scenario 2), the Upper Coosa River DPS of frecklebelly madtom was projected to have two units with low resiliency and one unit with unknown resiliency (see table 2, above). In terms of projected change from current condition, the Etowah River resilience unit is projected to become substantially more developed under this scenario, and, therefore, this unit is projected to decrease in resiliency from moderate to low. All other units are projected to retain their current resiliency.

In the high development scenario (Scenario 3), the Upper Coosa River DPS of frecklebelly madtom was projected to have one unit with low resiliency, one unit that is likely extirpated, and one unit with unknown resiliency (see table 2, above). In terms of projected change from current condition, the Etowah River resilience unit is projected to become substantially more developed under this scenario; therefore, this unit is projected to decrease in resiliency from moderate to low. The Conasauga River resilience unit is projected to decrease in resiliency from low to being likely extirpated as a result of high levels of both agriculture and developed land uses.

In summary, within the Upper Coosa River representation unit, the Etowah River resilience unit is projected to become more developed by 2050 under all scenarios; therefore, in the moderate and high development scenarios, the resiliency is projected to decrease from moderate to low, making the unit more vulnerable to stochastic events. The high level of development projected within riparian areas of the Etowah River unit will lead to an increase in impervious area, which could lead to further decreases in water quality and impact the viability of frecklebelly madtom. In addition, although the agricultural trend projects a decrease, the

amount of land in agricultural use is still projected to remain relatively high. High levels of agriculture and developed land use projections in this unit drive the projected low resiliency by the year 2050. In the Conasauga River resilience unit, developed land use under the high development scenario is projected to increase, and agriculture and developed land use are projected to be at relatively high levels by 2050. However, the Conasauga River resilience unit currently has low resiliency, and this projected increase in development is anticipated to further impact resiliency, resulting in likely extirpation of the frecklebelly madtom from this unit.

Finally, the presence of frecklebelly madtom in the Coosawattee River resilience unit is based on recent positive eDNA samples, and these units have been assessed as having an unknown resiliency. In the Coosawattee River resilience unit, there is projected to be relatively high amounts of agricultural and developed land. If the species is present there, this land use pattern could represent a threat to the individuals occupying the unit.

In the Upper Coosa River representation unit, two resilience units are projected to decrease in resiliency under the moderate and high scenarios. Therefore, frecklebelly madtom in these units are at an increased risk of extirpation from a catastrophic event.

Summary of Comments and Recommendations

In the November 19, 2020, proposed rule (85 FR 74050), we requested that all interested parties submit written comments on the proposal by January 19, 2021. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspapers notices inviting general public comment were published in the Chattanooga Times Free Press on November 20, 2020, and in the Dalton Citizen on November 27, 2020, and on December 4, 11, and 18, 2020. We did not receive any requests for a public hearing. All substantive information we received during the comment period has either been incorporated directly into this final determination or is addressed below.

Peer Reviewer Comments

As discussed in **Supporting Documents** above, we received comments on our SSA report from two peer reviewers. The frecklebelly madtom (*Noturus munitus*) SSA report documents the results of our comprehensive biological status review for the frecklebelly madtom species as a whole. We reviewed all comments we received from the peer reviewers for substantive issues and new information regarding the information contained in the SSA report. The peer reviewers provided additional information, clarifications, and suggestions to improve the final SSA report. Peer reviewer comments on the SSA report are addressed in the following summary and/or incorporated into the SSA report, as appropriate.

Comment (1): One reviewer thought that our method to produce a composite land-use threat classification should be adjusted such that the classification score would be equivalent to the lowest score of its constituent components rather than calculating a composite score that is an average of its constituents, unless there is reason to justify assessing otherwise.

Our response: Our stated goals for categorizing land-use threats endeavored to avoid overestimating a negative relationship between the species and land-use practices because, although this relationship is expected to exist, the magnitude of this relationship is uncertain without species-specific studies. Therefore, we did not change how we calculated the composite land-use threat classification that is the average of its constituents.

Comment (2): One reviewer commented that our future conditions projections should more explicitly consider other factors of change beyond land use and specified that impoundments and channelization should be incorporated.

Our response: The threats of impoundments and channelization were not included in the future conditions due to the high amount of uncertainty regarding their implementation and operation in the future landscape. At this time, we have no information to indicate that new dams will be constructed or that impoundments will be created in the future within the range of the Upper Coosa River DPS of frecklebelly madtom. However, dams, impoundments,

channelization, and channel maintenance are considered as factors that contribute to current resiliency, which help to inform future resiliency predictions.

Comment (3): One reviewer commented that our third “rule” in our rule set to estimate future resilience described in section 6.1 of the SSA report did not implement the same conservative approach described elsewhere in our methods.

Our response: Our third “rule” reads: “If composite land use score dropped from good to fair, we adjusted the resiliency down to moderate if the population is currently considered high; if the population is currently considered moderate, no adjustment was made to future resilience.” Elsewhere in the SSA report, we described an approach to avoid overestimating a negative response of the frecklebelly madtom to changes in land cover and land use. The best available science supports our interpretation that a fair land use score aligns with a moderate population resiliency as discussed in the SSA report (Service 2020, pp. 43-46). Furthermore, a predicted decline in the composite land use score from good to fair is not likely to cause substantial declines, indicating low resiliency, as demonstrated by two resilience units that currently have a “fair” land use score and are also currently classified as having “good” (Bogue Chitto unit) or “moderate” (Etowah River unit) resiliency. However, as described in our discussion of factors that influence viability of the species, many of the stressors to the Upper Coosa River DPS originate from land-use practices. Therefore, we determined it is likely that changes in land-use practices that cause the land-use score to change from good to fair would negatively affect abundance and distribution of populations to the point that a resilience classification of “moderate” would more effectively describe the resilience unit.

Comment (4): In the draft of the SSA provided for peer review, we considered resiliency units that were only known from eDNA data to have a “low” resiliency. One reviewer provided additional information and literature regarding uncertainty with eDNA surveying methods and recommended that we should be more conservative in interpreting results from studies that primarily surveyed for eDNA.

Our response: Based on the information provided, we agree with the reviewer that the eDNA data we received should be interpreted more conservatively. We included the citations provided by the reviewer and considered resilience units where only eDNA was available to support presence of the species to have an “unknown” current resiliency in version 1.2 of the SSA and in this final rule.

State Agency Comments

We received comments from one State agency, the Georgia Forestry Commission (GFC). Because we received several comments regarding forestry considerations, we have integrated GFC comments and responses under *Public Comments*, below.

Public Comments

We received input from five public commenters on the proposed rule. One commenter was supportive of the proposal to list the Upper Coosa River DPS of frecklebelly madtom as threatened and to designate critical habitat. Four commenters offered neither support nor opposition to the proposed rule. We did not receive any comments in opposition of the proposed rule. We note the SSA report, a list of literature referenced, the public comments, and the peer reviewer reports, all of which helped inform this listing decision, are available to the public on <https://www.regulations.gov> under Docket No. FWS-R4-ES-2020-0058.

Comment (5): Three commenters responded directly to our request for comments on whether we should add a provision to except incidental take resulting from silvicultural practices and forest management activities that implement State-approved best management practices (BMPs) and comply with forest practice guidelines related to water quality standards. All three commenters were supportive of inclusion of such a provision and provided information on the effectiveness of BMPs to maintain water quality conditions that support aquatic organisms, high implementation rates of BMPs nationally and within the range of the Upper Coosa River DPS of frecklebelly madtom, and high compliance rates. One commenter (GFC) provided information on BMP development for the State of Georgia and a summary of data from the State’s most

recent BMP compliance survey, conducted in 2019, which found high percentages of BMP implementation and compliance. Two commenters provided information on BMP compliance assurances that are provided through forest certification programs such as Sustainable Forestry Initiative, American Tree Farm System, and Forest Stewardship Council.

Our response: We recognize that silvicultural operations are widely implemented in accordance with State-approved BMPs (as reviewed by Cristan *et al.* 2018, entire), and the adherence to these BMPs broadly protects water quality, particularly related to sedimentation (as reviewed by Cristan *et al.* 2016, entire; Warrington *et al.* 2017, entire; and Schilling *et al.* 2021, entire). Based on the information provided, we agree that silvicultural practices and forest management activities that implement State-approved BMPs and comply with forest practice guidelines related to water quality standards can maintain favorable habitat conditions for the species and that adding a provision to except incidental take associated with these activities can encourage cooperation by landowners and other affected parties in implementing conservation measures. Therefore, we incorporated such a provision into this rule.

Comment (6): One commenter recommended that the description of designated critical habitat be clarified to state that critical habitat is limited to the bankfull width of the designated streams.

Our response: The critical habitat proposed for designation was not intended to include adjacent terrestrial components, and in the proposed rule, we stated that critical habitat included river habitat up to the “bank full height.” We agree that the term “bankfull width” better describes the lateral dimension of the stream. Therefore, we have revised the description of the critical habitat designation to clarify that it does not extend beyond the bankfull width of the designated rivers.

Comment (7): One commenter recommended we include a discussion of not only the ability of forest management to retain adequate conditions but also to improve forest conditions, which may rebound to the benefit of species.

Our response: When used and properly implemented, BMPs can offer a substantial improvement to water quality compared to forestry operations where BMPs are not properly implemented. As noted in our response to *Comment (5)*, above, we identify normal silvicultural practices that are carried out in accordance with State-approved BMPs as an action that can maintain favorable habitat conditions for the frecklebelly madtom, and we have added a provision to except from prohibitions incidental take that may occur from such activities. In this rule, we identified BMPs designed to reduce sedimentation, erosion, and bank-side destruction and retention of sufficient canopy cover along stream banks as examples of activities that could ameliorate threats to physical or biological features essential to the conservation of the frecklebelly madtom. In addition, as previously noted, we recognize that silvicultural operations are widely implemented in accordance with State-approved BMPs (as reviewed by Cristan *et al.* 2018, entire), and the adherence to these BMPs broadly protects water quality, particularly related to sedimentation (as reviewed by Cristan *et al.* 2016, entire; Warrington *et al.* 2017, entire; and Schilling *et al.* 2021, entire), to an extent that does not impair the DPS's conservation.

Distinct Population Segment (DPS) Analysis

Please see our proposed rule (85 FR 74050; November 19, 2020) for the full description of our DPS analysis. We did not receive substantive additional information during the open comment period regarding whether or not the Upper Coosa River DPS of the frecklebelly madtom is a valid DPS.

Determination of Status for the Upper Coosa River DPS of Frecklebelly Madtom

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an endangered species or a threatened species. The Act defines an “endangered species” as a species that is in danger of extinction throughout all or a significant portion of its range, and a “threatened species” as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we

determine whether a species meets the definition of endangered species or threatened species because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Upper Coosa River DPS of the frecklebelly madtom. We considered whether the Upper Coosa River DPS of the frecklebelly madtom is presently in danger of extinction throughout all of its range. The Upper Coosa River representation unit faces ongoing and future threats from habitat destruction and degradation caused by agriculture and developed land uses that result in poor water quality. Occurrence records in the Etowah River resilience unit are considered similar to historical occurrence records and occupancy did not decline between two sample periods over a fourteen-year period in the 2000s (Freeman *et al.* 2017, pg. 427). Declines from historical conditions in frecklebelly madtom occurrences and occupancy in the Conasauga River resilience unit have been recorded and individuals of the species have not been directly observed in the Conasauga River since 2000. Evidence of frecklebelly madtom presence was first reported from the Coosawattee River from eDNA collected in 2018. Until eDNA for the species was recorded from this river, the frecklebelly madtom was not expected to occur there, given that the history of physical modification to improve navigation upstream, as well as hydropeaking at Carters Dam, has negatively affected small-bodied, riffle-dwelling fish species (Freeman *et al.* 2011, pp. 10–11). Our analysis of future conditions in the SSA indicates that the frecklebelly madtom will likely continue to persist into the future, albeit at reduced resiliency under some scenarios (Service 2020, pp. 80-101). Therefore, it is not likely that the current threats, or the cumulative

effects of those threats, will result in the extirpation of the DPS and we conclude that the DPS is not currently in danger of extinction throughout all of its range.

In the future, projected urbanization and continued agricultural activities will continue to impact the Upper Coosa River DPS and its habitat by negatively affecting water quality (Factor A). Our future scenarios project the Etowah River and Conasauga River units in the Upper Coosa River representation unit to have low resiliency or to become extirpated by the year 2050, and this would substantially increase the risk of extirpation of the Upper Coosa River representation unit from the aforementioned threats, as well as a catastrophic or stochastic event, within the foreseeable future. In our consideration of foreseeable future, we evaluated how far into the future we could reliably predict the threats to this unit, as well as the frecklebelly madtom's response to those threats. Based on the modeling and scenarios (agriculture and developed land-use projections to 2050) evaluated, we considered our ability to make reliable predictions in the future and the uncertainty in how and to what degree the unit could respond to those risk factors in this timeframe. We determined a foreseeable future of 30 years for the Upper Coosa River representation unit. Based on this information, we find the Upper Coosa River DPS of the frecklebelly madtom is likely to become endangered within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity v. Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020) (*Everson*), vacated the aspect of the Final Policy on Interpretation of the Phrase "Significant Portion of Its Range" in the Endangered Species Act's Definitions of "Endangered Species" and "Threatened Species" (Final Policy; 79 FR 37578; July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we

proceed to evaluating whether the species (DPS) is endangered in a significant portion of its range—that is, whether there is any portion of the species’ range for which both (1) the portion is significant; and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the “significance” question or the “status” question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species’ range.

Following the court’s holding in *Everson*, we now consider whether there are any significant portions of the species’ range where the species is in danger of extinction now (*i.e.*, endangered). In undertaking this analysis for the Upper Coosa River DPS of the frecklebelly madtom, we chose to address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify portions of the range where the species may be endangered. We considered whether the threats acting on the Upper Coosa River DPS are geographically concentrated in any portion of the range at a biologically meaningful scale. We examine the following threats that were considered to be primary factors driving current resiliency of the Upper Coosa River DPS: habitat destruction and degradation caused by agriculture and developed land uses resulting in poor water quality (Factor A).

Habitat destruction and degradation from agriculture and developed land uses resulting in poor water quality are occurring throughout the range of the Upper Coosa River DPS. In the Conasauga River resilience unit, current development and agriculture comprises 8.0 percent and 21.3 percent of the watershed, respectively (Service 2020, pp. 66–69). In the Coosawattee River resilience unit, current development and agriculture comprises 6.6 percent and 27.2 percent of the watershed, respectively (Service 2020, pp. 66–69). Lastly, current development and agriculture comprises 14.8 percent and 10.4 percent of the Etowah River resilience unit (Service 2020, pp. 66–69). For the three resilience units assessed within the DPS, approximately 25 to 33

percent of each unit is currently impacted by agricultural and developed land uses. Therefore, we found no concentration of threats in any portion of the Upper Coosa River DPS's range at a biologically meaningful scale. However, we identified one portion, the Conasauga River resilience unit, which currently has low resiliency and where the frecklebelly madtom has not been observed, despite repeated surveys, in at least 20 years. Environmental DNA surveys have detected the frecklebelly madtom in the Conasauga River resilience unit, leading us to determine the species remains present there. However, the lack of recent occurrence data coupled with projections that this unit will become extirpated within the foreseeable future led us to find there is substantial information that the Conasauga River resilience unit may be endangered.

We then proceeded to consider whether this portion of the range (*i.e.*, the Conasauga River resilience unit) is significant. For purposes of this analysis, the Service is examining for significant portions of the range by applying any reasonable definition of "significant." We asked whether any portions of the range may be biologically meaningful in terms of the resiliency, redundancy, or representation of the entity being evaluated. This approach is consistent with the Act, our implementing regulations, our policies, and case law.

The Upper Coosa River representation unit occurs in the Ridge and Valley (Conasauga River resilience unit) and Piedmont Upland (Etowah River resilience unit) physiographic provinces. The Conasauga River resilience unit occurs in the Ridge and Valley province, which contains a series of valleys (lowlands) and ridges (mountains) through the Appalachians (Fenneman 1928, p. 296). The Etowah River resilience unit occurs in the Piedmont province, which contains lowlands (plains) and highlands (plateaus) with isolated mountains (Fenneman 1928, p. 293). These two resilience units may occur in two physiographic provinces; however, the geography in both similarly represents environmental and physical conditions of lowlands and highlands associated with higher elevations. Frecklebelly madtoms collected in both the Conasauga River and Etowah River resilience units are strongly associated with river weed (*Podostemum* spp.) used for cover and shelter. Neither unit acts as a refugia or an important

spawning ground for the DPS. In addition, the Conasauga River resilience unit watershed is experiencing similar impacts from development and agricultural land use to the Etowah River resilience unit. Because the Upper Coosa River DPS of the frecklebelly madtom occurs in rivers with similar physical and environmental conditions, and the Conasauga River resilience unit portion is experiencing similar water quality impacts as the remainder of the DPS's range, there is no unique observable environmental contribution by this portion that would make it a significant portion of the range of the Upper Coosa River DPS.

Overall, there is little evidence to indicate that the Conasauga River portion of the range has higher quality or higher value habitat or any other special importance to the species' conservation in the Upper Coosa River DPS. We considered if the Conasauga River portion contributes to biological significance in any way listed above and did not find this portion to be prominent or noteworthy in a manner that would suggest it is a significant portion of the DPS's range. Thus, based on the best available information, we find that this portion of the DPS's range is not significant. Therefore, no portion of the Upper Coosa River DPS's range provides a basis for determining that it is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This does not conflict with the courts' holdings in *Desert Survivors v. U.S. Department of the Interior*, 321 F. Supp. 3d 1011, 1070-74 (N.D. Cal. 2018) and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy's definition of "significant" that those court decisions held were invalid.

Determination of Status

Based on the best available scientific and commercial information as presented in the SSA report and this finding, we find that the Upper Coosa River representation unit is likely to become endangered within the foreseeable future throughout all of its range. Therefore, we are

listing the Upper Coosa River DPS of the frecklebelly madtom as a threatened species throughout all of its range in accordance with sections 3(20) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened species under the Act include recognition as a listed species, planning and implementation of recovery actions, requirements for Federal protection, and prohibitions against certain practices.

Recognition through listing results in public awareness, and conservation by Federal, State, Tribal, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning consists of preparing draft and final recovery plans, beginning with the development of a recovery outline and making it available to the public within 30 days of a final listing determination. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan also identifies recovery criteria for review of when a species may be ready for reclassification from endangered to threatened (“downlisting”) or removal from protected status (“delisting”), and methods for monitoring recovery progress.

Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website (<https://www.fws.gov/program/endangered-species>), or from our Alabama Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (*e.g.*, restoration of native vegetation), research, captive propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, and Tribal lands.

Following publication of this final rule, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the States of Georgia and Tennessee will be eligible for Federal funds to implement management actions that promote the protection or recovery of the Upper Coosa River DPS of the frecklebelly madtom. Information on our grant programs that are available to aid species recovery can be found at: <https://www.fws.gov/service/financial-assistance>.

Please let us know if you are interested in participating in recovery efforts for the Upper Coosa River DPS. Additionally, we invite you to submit any new information on this species

whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**, above).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the range of the Upper Coosa River DPS of the frecklebelly madtom habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered, or on private lands seeking funding by Federal agencies, which may include, but are not limited to, the USDA U.S. Forest Service, USDA Farm Service Agency, USDA Natural Resources Conservation Service, and Federal Emergency Disaster Service; issuance of section 404 Clean Water Act (33 U.S.C. 1251 *et seq.*) permits by the U.S. Army Corps of Engineers; and construction and maintenance of roads or highways by the Federal Highway Administration.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species. The discussion below regarding protective regulations under section 4(d) of the Act complies with our policy.

II. Final Rule Issued Under Section 4(d) of the Act

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S. Supreme Court has noted that statutory language like “necessary and advisable” demonstrates a large degree of deference to the agency (see *Webster v. Doe*, 486 U.S. 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary’s discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife or include a limited taking prohibition (see *Alsea Valley Alliance v. Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council v. National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (see *State of Louisiana v. Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, “once an animal is on the threatened list, the Secretary has an almost infinite number of options available to [her] with regard to the permitted

activities for those species. [She] may, for example, permit taking, but not importation of such species, or [she] may choose to forbid both taking and importation but allow the transportation of such species” (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising our authority under section 4(d), we have developed a rule that is designed to address the specific threats and conservation needs for the Upper Coosa River DPS of the frecklebelly madtom. Although the statute does not require us to make a “necessary and advisable” finding with respect to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the Upper Coosa River DPS of frecklebelly madtom. As discussed above under **Summary of Biological Status and Threats**, we have concluded that the Upper Coosa River DPS is likely to become in danger of extinction within the foreseeable future primarily due to habitat destruction and degradation from agriculture and developed land uses that result in poor water quality. The provisions of this 4(d) rule will promote conservation of the Upper Coosa River DPS by encouraging management of the landscape in ways that meet both watershed and riparian management purposes and the conservation needs of the Upper Coosa River DPS. The provisions of this rule are one of many tools that we will use to promote the conservation of the Upper Coosa River DPS.

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of designated critical habitat of such species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under

section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.

This obligation does not change in any way for a threatened species with a species-specific 4(d) rule. Actions that result in a determination by a Federal agency of “not likely to adversely affect” continue to require the Service’s written concurrence and actions that are “likely to adversely affect” a species require formal consultation and the formulation of a biological opinion.

Provisions of the 4(d) Rule

This 4(d) rule will provide for the conservation of the Upper Coosa River DPS by prohibiting the following activities, except as otherwise authorized or permitted: importing or exporting; take; possession and other acts with unlawfully taken specimens; delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce. We also include several exceptions to these prohibitions, which, along with the prohibitions, are set forth under **Regulation Promulgation**, below.

Under the Act, “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulation at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Protecting the Upper Coosa River DPS of the frecklebelly madtom from direct forms of take, such as physical injury or killing, whether incidental or intentional, will help preserve and recover the remaining populations of the DPS. Therefore, we prohibit intentional take of frecklebelly madtom, including, but not limited to, capturing, handling, trapping, collecting, or other activities. Also, as discussed above under

Summary of Biological Status and Threats, habitat destruction and degradation from agriculture and developed land uses are affecting the status of the Upper Coosa River DPS. Across the DPS's range, stream and water quality have been degraded physically by sedimentation, pollution, contaminants, impoundments, channelization, destruction of riparian habitat, and loss of riparian vegetation due to agriculture activities and development within the watershed and riparian areas. Other habitat or hydrological alteration, such as ditching, draining, stream diversion, or diversion or alteration of surface or ground water flow into or out of the stream, will impact the habitat of the DPS. Therefore, we prohibit actions that result in the incidental take of the Upper Coosa River DPS by destroying, altering, or degrading the habitat in the manner described above. Regulating these activities will help conserve the DPS slow the rate of population decline, and decrease synergistic, negative effects from other stressors.

Exceptions to Prohibitions

In addition to certain statutory exceptions from prohibitions, which are found in sections 9 and 10 of the Act, the 4(d) rule includes the following exceptions to the prohibitions:

Permitted Activities

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for the following purposes: For scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the Act. The Act also contains certain exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

Activities Not Requiring a Permit

We recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed species. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and

candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Service in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Service shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, will be able to conduct activities designed to conserve the Upper Coosa River DPS that may result in otherwise prohibited take without additional authorization.

In this rule, we allow take of the individuals of the Upper Coosa River DPS without a permit by any employee or agent of the Service or a State conservation agency designated by his agency for such purposes and when acting in the course of his official duties if such action is necessary to aid a sick, injured or orphaned specimen; dispose of a dead specimen; or salvage a dead specimen which may be useful for scientific study. In addition, Federal and State law enforcement officers may possess, deliver, carry, transport, or ship specimens taken in violation of the Act as necessary.

Channel Restoration, Streambank Stabilization, and Other Activities

Channel restoration is used as a technique to restore degraded, physically unstable streams back to natural, physically stable, ecologically functioning streams. When done correctly, these projects reduce, ameliorate, or fix unnatural erosion, head cutting, and/or sedimentation. Thus, channel restoration projects result in geomorphically stable stream channels that maintain the appropriate lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation and include stable riffle-run-pool complexes that consist of silt-free gravel, coarse sand, cobble, boulders, woody structure, and river weed (*Podostemum* spp.). This provision of the 4(d) rule for channel restoration will promote conservation of the Upper Coosa River DPS by excepting incidental take resulting from

activities that improve channel conditions and restore degraded, physically unstable streams or stream segments. We anticipate these activities will advance ecological conditions within a watershed to a more natural state that will benefit the frecklebelly madtom.

Streambank stabilization is used as a habitat restoration technique to restore degraded and eroded streambanks back to natively vegetated, stable streambanks. When done correctly, these projects reduce bank erosion and instream sedimentation, resulting in improved habitat conditions for aquatic species. Therefore, we will allow streambanks to be stabilized using the following bioengineering methods: native live stakes (live, vegetative cuttings inserted or tamped into the ground in a manner that allows the stake to take root and grow), native live fascines (live branch cuttings, usually willows, bound together into long, cigar-shaped bundles), or native brush layering (cuttings or branches of easily rooted tree species layered between successive lifts of soil fill). All methods must use plant species native to the region where the project is being conducted. These methods must not include the sole use of quarried rock (rip-rap) or the use of rock baskets or gabion structures, but they could be used in conjunction with the above bioengineering methods. This provision of the 4(d) rule for streambank stabilization will promote conservation of the Upper Coosa River DPS by excepting from the prohibition incidental take resulting from activities that will improve habitat conditions by reducing bank erosion and instream sedimentation.

Improving watershed, riparian, and habitat conditions within the range of the Upper Coosa River DPS will provide for the conservation of the DPS and will likely increase resiliency throughout. Activities that would benefit the DPS, if they do not alter habitats known to be used by the DPS beyond its tolerances, are implemented with a primary objective of improving environmental conditions to support the aquatic biodiversity of flowing water habitats. This provision of the 4(d) rule for other activities will promote conservation of the Upper Coosa River DPS by excepting from the prohibition incidental take resulting from activities as described above.

Silviculture and Forest Management under State-Approved Best Management Practices

We are excepting incidental take resulting from silviculture and forest management activities that use State-approved BMPs to protect water and sediment quality and stream and riparian habitat. Best management practices are designed to reduce sedimentation, erosion, and bank destruction, thereby protecting instream habitat for the species. We recognize that silvicultural operations are widely implemented in accordance with State-approved BMPs (as reviewed by Cristan *et al.* 2018, entire), and the adherence to these BMPs broadly protects water quality, particularly related to sedimentation (as reviewed by Cristan *et al.* 2016, entire; Warrington *et al.* 2017, entire; and Schilling *et al.* 2021, entire). This provision of the 4(d) rule for silviculture and forest management activities will promote conservation of the Upper Coosa River DPS by excepting from the prohibition incidental take resulting from activities that use State-approved BMPs.

Relation of 4(d) Rule to Available Conservation Measures

Nothing in this 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of the Service to enter into partnerships for the management and protection of the Upper Coosa River DPS. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service, where appropriate.

III. Critical Habitat

Background

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species, and

(b) Which may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Our regulations at 50 CFR 424.02 define the geographical area occupied by the species as an area that may generally be delineated around species' occurrences, as determined by the Secretary (*i.e.*, range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (*e.g.*, migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals).

Conservation, as defined under section 3 of the Act, means to use and the use of all methods and procedures that are necessary to bring an endangered or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Such methods and procedures include, but are not limited to, all activities associated with scientific resources management such as research, census, law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking.

Critical habitat receives protection under section 7 of the Act through the requirement that Federal agencies ensure, in consultation with the Service, that any action they authorize, fund, or carry out is not likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Designation also does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by non-Federal landowners. Where a landowner requests Federal agency funding or authorization for an action that may affect a listed species or critical habitat, the Federal agency would be required to consult with the Service under section 7(a)(2) of the Act. However, even if the Service were to conclude that the proposed activity would result in destruction or adverse modification of the critical habitat, the Federal action agency and the landowner are not required to abandon the proposed activity, or to restore

or recover the species; instead, they must implement “reasonable and prudent alternatives” to avoid destruction or adverse modification of critical habitat.

Under the first prong of the Act’s definition of critical habitat, areas within the geographical area occupied by the species at the time it was listed are included in a critical habitat designation if they contain physical or biological features (1) which are essential to the conservation of the species and (2) which may require special management considerations or protection. For these areas, critical habitat designations identify, to the extent known using the best scientific and commercial data available, those physical or biological features that are essential to the conservation of the species (such as space, food, cover, and protected habitat).

Under the second prong of the Act’s definition of critical habitat, we can designate critical habitat in areas outside the geographical area occupied by the species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the *Federal Register* on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106-554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be designated as critical habitat, our primary source of information is generally the information from the SSA report and information developed during the listing process for the species. Additional information sources may include any generalized conservation strategy, criteria, or outline that may have been developed for the species; the recovery plan for the species; articles in peer-reviewed journals; conservation plans

developed by States and counties; scientific status surveys and studies; biological assessments; other unpublished materials; or experts' opinions or personal knowledge.

Habitat is dynamic, and species may move from one area to another over time. We recognize that critical habitat designated at a particular point in time may not include all of the habitat areas that we may later determine are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be needed for recovery of the species. Areas that are important to the conservation of the species, both inside and outside the critical habitat designation, will continue to be subject to: (1) Conservation actions implemented under section 7(a)(1) of the Act; (2) regulatory protections afforded by the requirement in section 7(a)(2) of the Act for Federal agencies to ensure their actions are not likely to jeopardize the continued existence of any endangered or threatened species; and (3) the prohibitions found in the 4(d) rule. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. These protections and conservation tools will continue to contribute to recovery of this DPS. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available at the time of these planning efforts calls for a different outcome.

Section 4(a)(3) of the Act, as amended, and implementing regulations (50 CFR 424.12) require that, to the maximum extent prudent and determinable, the Secretary shall designate critical habitat at the time the species is determined to be an endangered or threatened species.

As discussed earlier in this document, there is currently no imminent threat of take attributed to collection or vandalism identified under Factor B for this species, and identification and mapping of critical habitat is not expected to initiate any such threat. In our SSA and listing determination for the Upper Coosa River DPS of the frecklebelly madtom, we determined that

the present or threatened destruction, modification, or curtailment of habitat or range is a threat to the Upper Coosa River DPS and that those threats in some way can be addressed by section 7(a)(2) consultation measures. The DPS occurs wholly in the jurisdiction of the United States, and we are able to identify areas that meet the definition of critical habitat. Therefore, because none of the circumstances enumerated in our regulations at 50 CFR 424.12(a)(1) have been met and because there are no other circumstances the Secretary has identified for which this designation of critical habitat would be not prudent, we have determined that the designation of critical habitat is prudent for the Upper Coosa River DPS.

Having determined that designation is prudent, under section 4(a)(3) of the Act we must find whether critical habitat for the Upper Coosa River DPS of the frecklebelly madtom is determinable. We reviewed the available information pertaining to the biological needs of the Upper Coosa River DPS and habitat characteristics where this DPS is located. This and other information represent the best scientific data available and led us to conclude that the designation of critical habitat is determinable for the Upper Coosa River DPS.

Physical or Biological Features Essential to the Conservation of the Species

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12(b), in determining which areas we will designate as critical habitat from within the geographical area occupied by the species at the time of listing, we consider the physical or biological features that are essential to the conservation of the species and which may require special management considerations or protection. The regulations at 50 CFR 424.02 define “physical or biological features essential to the conservation of the species” as the features that occur in specific areas and that are essential to support the life-history needs of the species, including, but not limited to, water characteristics, soil type, geological features, sites, prey, vegetation, symbiotic species, or other features. A feature may be a single habitat characteristic or a more complex combination of habitat characteristics. Features may include habitat characteristics that support ephemeral or dynamic habitat conditions. Features may also be expressed in terms relating to principles of

conservation biology, such as patch size, distribution distances, and connectivity. For example, physical features essential to the conservation of the species might include gravel of a particular size required for spawning, alkaline soil for seed germination, protective cover for migration, or susceptibility to flooding or fire that maintains necessary early-successional habitat characteristics. Biological features might include prey species, forage grasses, specific kinds or ages of trees for roosting or nesting, symbiotic fungi, or a particular level of nonnative species consistent with conservation needs of the listed species. The features may also be combinations of habitat characteristics and may encompass the relationship between characteristics or the necessary amount of a characteristic essential to support the life history of the species.

In considering whether features are essential to the conservation of the species, we may consider an appropriate quality, quantity, and spatial and temporal arrangement of habitat characteristics in the context of the life-history needs, condition, and status of the species. These characteristics include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance.

The Upper Coosa River DPS is a population segment of the frecklebelly madtom and occurs in the upper Coosa River system in the Piedmont Upland physiographic province in Georgia and the Ridge and Valley physiographic province in Georgia and Tennessee. The primary habitat features that influence the resiliency of the Upper Coosa River DPS include flowing water, suitable water quality, substrate, cover, and habitat connectivity. These features are essential to the survival and reproduction of individuals at all life stages.

As stated above, the frecklebelly madtom occurs in small to large, swift-flowing rivers consisting of stable riffle-run pool complexes and with a substrate that consists of silt-free gravel, coarse sand, cobble, and boulders. The species needs unimpounded flowing water to successfully reproduce and maintain populations. In addition, streams must have an adequate

flow to maintain instream habitats and connectivity of streams with the floodplain, which is important to allow nutrient and sediment exchange for habitat maintenance. Stream reaches with suitable habitat must be large enough and have connectivity to support enough frecklebelly madtoms to ensure individuals can find a mate and reproduce (Service 2020, p. 17). Cover is an important component of suitable habitat for the frecklebelly madtom and provides shelter from predators, space to forage, and space to nest. The species is often found in or near aquatic vegetation, such as river weed (*Podostemum* spp.), woody structures, and under large, flat rocks. In addition, nesting sites for madtoms are typically cavities under natural material (rocks, logs, empty mussel shells). Thus, small to large flowing rivers with appropriate substrate, cover, and connectivity are important for the growth, reproduction, and survival of the frecklebelly madtom.

The frecklebelly madtom, like other benthic species, is sensitive to poor water quality (Warren *et al.* 1997, p. 125) and needs clean, flowing water to survive. Changes in water chemistry and flow patterns, resulting in a decrease in water quality and quantity, have detrimental effects on madtom ecology, because they can render aquatic habitat unsuitable for occupancy. In addition, the frecklebelly madtom is intolerant of excessive sedimentation (Shepard 2004, p. 221). The minimum and maximum standards of water quality and quantity conditions that are conducive to the presence of frecklebelly madtom are not well known. However, muddy waterways, lentic streams (still water), and poor water quality conditions are not desirable for maintaining suitable habitat for the species. Therefore, appropriate water and sediment quality are necessary to sustain growth, reproduction, and viability of the frecklebelly madtom and are essential to the conservation of the species.

The species is an opportunistic insectivore feeding on a variety of aquatic insects and larvae, including caddisflies, mayflies, blackflies, and midges (Miller 1984, p. 9). Seasonal changes found in diet probably reflect differences in prey availability (Miller 1984, p. 11). Therefore, a diverse and available aquatic macroinvertebrate assemblage is important to the growth and survival of the frecklebelly madtom.

More detail of the habitat and life-history needs of the frecklebelly madtom and a thorough review are available in our proposed rule (85 FR 74050; November 19, 2020) and in the SSA report (Service 2020, entire; available on <https://www.regulations.gov> under Docket No. FWS-R4-ES-2020-0058). A summary of the resource needs of the Upper Coosa River DPS is provided below in table 3.

Table 3—Resource Needs for the Upper Coosa River DPS of the Frecklebelly Madtom to Complete Each Life Stage.

Life Stage	Resources Needed
Fertilized eggs	Flowing water with good water quality; cavities for shelter; parental care
Larvae	Flowing water with good water quality; low predation, disease, and environmental stress; adequate food availability
Juveniles	Flowing water with good water quality; low predation, disease, and environmental stress; structure (vegetation, rock, substrate) for shelter and forage; adequate food availability
Adults	Flowing water with adequate water quality; structure (vegetation, rock, substrate) for shelter, forage, and nesting; cavities for nesting; appropriate male to female demographics; adequate food availability

Summary of Essential Physical or Biological Features

We derive the specific physical or biological features essential to the conservation of Upper Coosa River DPS of the frecklebelly madtom from studies of the species' habitat, ecology, and life history as described above. Additional information can be found in the SSA report (Service 2020, entire; available on <https://www.regulations.gov> under Docket No. FWS-R4-ES-2020-0058). We have determined that the following physical or biological features are essential to the conservation of Upper Coosa River DPS of the frecklebelly madtom:

- (1) Geomorphically stable, medium to large streams with:
 - (a) Stable stream channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation; and
 - (b) Banks with intact riparian cover to maintain stream morphology and reduce erosion and sediment inputs.

(2) Connected instream habitats that:

(a) Include stable riffle-run pool complexes;

(b) Have abundant cobble, boulders, and woody structures, or other suitable cover used for nesting and river weed (*Podostemum* spp.) that is free of silt.

(3) Adequate flows, or a hydrologic flow regime (which includes the severity, frequency, duration, and seasonality of discharge over time), necessary to maintain instream habitats and to maintain connectivity of streams with the floodplain, allowing the exchange of nutrients and sediment for maintenance of the fish's habitat, food availability, and ample oxygenated flow for spawning and nesting habitat.

(4) Appropriate water and sediment quality (including, but not limited to, conductivity; hardness; turbidity; temperature; pH; ammonia; heavy metals; pesticides; animal waste products; and nitrogen, phosphorus, and potassium fertilizers) necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages.

(5) Diversity and availability of aquatic macroinvertebrate prey items, which include larval midges, mayflies, caddisflies, dragonflies, and beetles.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the specific areas within the geographical area occupied by the species at the time of listing contain features which are essential to the conservation of the species and which may require special management considerations or protection. The features essential to the conservation of the Upper Coosa River DPS may require special management considerations or protections to reduce the following threats: (1) Urbanization of the landscape, including (but not limited to) land conversion for urban and commercial use, infrastructure (roads, bridges, utilities), and urban water uses (water supply reservoirs, wastewater treatment); (2) nutrient pollution from agricultural activities that impact water quantity and quality; (3) significant alteration of water quality; (4) culvert and pipe installation that creates barriers to movement; (5) other watershed and floodplain disturbances

that release sediments or nutrients into the water or fill suitable spawning habitat; and (6) creation of reservoirs that convert permanently flowing streams and/or streams that hold water into lake or pond-like (lentic) environments.

Management activities that could ameliorate these threats include, but are not limited to, use of best management practices (BMPs) designed to reduce sedimentation, erosion, and bank-side destruction; protection of riparian corridors and suitable spawning habitat; retention of sufficient canopy cover along banks; moderation of surface and ground water withdrawals to maintain natural flow regimes; increased use of stormwater management and reduction of stormwater flows into the stream systems; placement of culverts or bridges that accommodate fish passage; and reduction of other watershed and floodplain disturbances that release sediments, pollutants, or nutrients into the water.

Criteria Used to Identify Critical Habitat

As required by section 4(b)(2) of the Act, we use the best scientific data available to designate critical habitat. In accordance with the Act and our implementing regulations at 50 CFR 424.12(b), we review available information pertaining to the habitat requirements of the species and identify specific areas within the geographical area occupied by the species at the time of listing and any specific areas outside the geographical area occupied by the species to be considered for designation as critical habitat. To determine and select appropriate occupied areas that contain the physical or biological features essential to the conservation of the species or areas otherwise essential for the conservation of the Upper Coosa River DPS of the frecklebelly madtom, we developed a conservation strategy for the DPS. The goal of the conservation strategy for the Upper Coosa River DPS of the frecklebelly madtom is to recover the DPS to the point where the protections of the Act are no longer necessary. The role of critical habitat in achieving this conservation goal is to identify the specific areas within the Upper Coosa River DPS's range that provide essential physical or biological features, without which rangewide resiliency, redundancy, and representation could not be achieved. We anticipate that recovery

will require continued protection of existing resilience units and habitats that contribute to the viability of the DPS, as well as ensuring there are adequate numbers of fish in stable units and that at least one sufficiently resilient unit occurs in each of the physiographic provinces (Piedmont Upland and Ridge and Valley). This will help to ensure that catastrophic events, such as floods, cannot simultaneously affect all known resilience units of the DPS. Recovery considerations, such as maintaining existing genetic diversity and striving for representation of both physiographic provinces in the DPS's current range, were considered.

In developing our conservation strategy for determining which areas to include as critical habitat for the Upper Coosa River DPS, we focused on the existing resilience units and habitats that are presently contributing to the viability of the species or historical units in which resiliency can be improved such that they contribute to the viability of the species. In summary, we identified streams and rivers that are both: (1) Currently occupied streams and rivers within the known historical range of the Upper Coosa River DPS and (2) those areas that have retained the physical or biological features identified earlier that will allow for the maintenance and expansion of existing populations. For the purposes of the critical habitat designation, and for areas within the geographic area occupied by the species at the time of listing, we determined a unit to be occupied if it contains a recent (*i.e.*, observed in the past 11 years (since 2009)) observation (collection) or eDNA record that supports the presence of the species. Within those areas, we delineated the boundaries of critical habitat units using the following process:

We evaluated habitat suitability of stream and river channels within the geographical area occupied at the time of listing, and retained for further consideration those streams that contain one or more of the physical and biological features to support life-history functions essential to conservation of the Upper Coosa River DPS. We determined the end points of river units by evaluating the presence or absence of appropriate physical and biological features. Our upstream cutoff points for each stream are located approximately where the physiographic province that the frecklebelly madtom occupies begins (where the Conasauga River flows out of the Blue

Ridge and into the Ridge and Valley physiographic province and where the Etowah River flows out of the Blue Ridge and into the Piedmont Upland physiographic province) and selected downstream cutoff points that omit areas where habitat conditions are less favorable for the species (*i.e.*, do not contain the physical or biological features essential to the conservation of the DPS).

Based on this analysis, the following rivers meet criteria for areas occupied by the species at the time of listing: Conasauga River, Coosawattee River, and Etowah River. These areas include the two rivers, Conasauga River and Etowah River, known to have been occupied by the DPS historically. Environmental DNA of the frecklebelly madtom was detected in the Conasauga River in 2017 and 2018, which meets the criteria for consideration as an area occupied by the species at the time of listing. In the Etowah River, occurrence data and eDNA records from 2018 are available. These two areas meet our conservation strategy for the frecklebelly madtom. Designating critical habitat of streams in these two occupied resilience units of the DPS, which occur in both physiographic provinces and currently contribute to (or are historical units in which resiliency can be improved to contribute to) the species' viability, will help protect, and eventually reduce the risk of extirpation, of the DPS.

The designation does not include the Coosawattee River, which is not part of the known historical range of the species. Environmental DNA of the frecklebelly madtom was detected in the Coosawattee River in 2018, which meets the criteria for consideration as an area occupied by the species at the time of listing. However, since the Coosawattee River is not part of the known historical range of the frecklebelly madtom, this area does not meet our conservation strategy for designating critical habitat for the species. The conservation strategy focused on areas within the historical known range of the species. In addition, since the species has never been directly observed in this river despite multiple surveys over time, using the best available information, we determined this area is not a historical unit in which resiliency can be improved to contribute to the species' viability. Lastly, we determined that sufficient areas (Conasauga River and Etowah

River) to provide for the conservation of the species already have been identified within this final designation. We did not receive information during the public comment period that supported designating as critical habitat areas not included in the proposed units (see **Critical Habitat Designation**, below).

We are not designating any areas outside the geographical area occupied by the Upper Coosa River DPS because we did not identify any unoccupied areas that are essential for the conservation of the species. The protection of the Conasauga River and Etowah River will sufficiently reduce the risk of extinction. Sources of data for this designation of critical habitat include multiple databases maintained by universities and State agencies in Tennessee and Georgia, as well as numerous survey reports on streams throughout the DPS's range. Other sources of available information on habitat requirements for this species include studies conducted at occupied sites and published in peer-reviewed articles, agency reports, and data collected during monitoring efforts (Shepard *et al.* 1997, entire; Bennett *et al.* 2008, entire; Bennett and Kuhajda 2010, entire; Albanese *et al.* 2018, entire; Service 2020, entire). Observation and eDNA records were compiled and provided to us by State partners during the SSA analysis.

When determining critical habitat boundaries, we made every effort to avoid including developed areas such as lands covered by buildings, pavement, and other structures because such lands lack physical or biological features necessary for the Upper Coosa River DPS. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed lands. Any such lands inadvertently left inside critical habitat boundaries shown on the maps of this rule have been excluded by text in the rule and are not designated as critical habitat. Therefore, a Federal action involving these lands will not trigger section 7 consultation with respect to critical habitat and the requirement of no adverse modification unless the specific action will affect the physical or biological features in the adjacent critical habitat.

We are designating as critical habitat areas that we have determined are occupied at the time of listing (*i.e.*, currently occupied) and that contain one or more of the physical or biological features that are essential to support life-history processes of the species. Units are designated based on one or more of the physical or biological features being present to support the Upper Coosa River DPS's life-history processes. Unit 1 contains only some of the physical or biological features necessary to support the Upper Coosa River DPS's particular use of that habitat. Unit 2 contains all of the identified physical or biological features and supports multiple life-history processes.

The critical habitat designation is defined by the map or maps, as modified by any accompanying regulatory text, presented at the end of this document under **Regulation Promulgation**. We include more detailed information on the boundaries of the critical habitat designation in the preamble of this document. We will make the coordinates or plot points or both on which each map is based available to the public on <https://www.regulations.gov> at Docket No. FWS-R4-ES-2020-0058 and on our internet site at <https://www.fws.gov/southeast/>.

Final Critical Habitat Designation

We are designating approximately 134 river miles (mi) (216 river kilometers (km)) in two units as critical habitat for the Upper Coosa River DPS of the frecklebelly madtom. The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the Upper Coosa River DPS. The two units are: (1) Conasauga River Unit and (2) Etowah River Unit. Table 4, below, shows the critical habitat units, land ownership, and the approximate river miles of each unit. Per State regulations (Tennessee Code Annotated section 69–1–101 and Georgia Code section 52–1–31), navigable waters are considered public rights-of-way. Lands beneath the navigable waters included in this final rule are owned by the States of Tennessee or Georgia. Ownership of lands beneath nonnavigable waters included in this rule are determined by riparian land ownership. The

riparian land adjacent to the designated critical habitat is 85 percent private, 6 percent local government, 5 percent State, and 4 percent Federal lands.

Table 4—Critical Habitat Units for the Upper Coosa River DPS of the Frecklebelly Madtom.

Critical Habitat Unit	Riparian Ownership Surrounding Units	River Miles (Kilometers)
1. Conasauga River	Private, State, Federal	51.5 (83)
2. Etowah River	Private, Local, State	82.5 (133)
Total		134 (216)

Note: Lengths may not sum due to rounding.

We present brief descriptions of all units, and reasons why they meet the definition of critical habitat for the Upper Coosa River DPS, below.

Unit 1: Conasauga River

Unit 1 consists of approximately 51.5 river mi (83 km) of the Conasauga River beginning at the mouth of Coahulla Creek in Whitfield and Murray Counties, Georgia, and continuing upstream through Bradley County, Tennessee, to the mouth of Graham Branch in Polk County, Tennessee. Unit 1 does not extend beyond the bankfull width of the river. Frecklebelly madtom occupies all river reaches in this unit. Unit 1 contains some of the physical or biological features essential to the conservation of the DPS. Unit 1 possesses those characteristics, as described above under *Summary of Essential Physical or Biological Features*, of essential physical or biological features (1), (2), (3), and (5). Essential physical or biological feature (4) is degraded in this unit, but with appropriate management and restoration actions, this physical or biological feature can be restored.

Special management considerations or protection may be required within Unit 1 to alleviate impacts from stressors that have led to the degradation of the habitat, including sedimentation, pollutant input, excess nutrient input, development, and unstable stream banks. Surrounding land-use practices, including agricultural runoff, agricultural ditching, and erosion, have led to high levels of sedimentation, siltation, contamination, and nutrient-loading, as well as

destabilized stream banks. Special management considerations related to agricultural and developed areas that will benefit the habitat in this unit include, but are not limited to, riparian buffer restoration, reduced surface and groundwater withdrawals, increased open space in the watershed, and treating wastewater to the highest level practicable.

Unit 2: Etowah River

Unit 2 consists of approximately 82.5 river mi (133 km) of the Etowah River beginning at its confluence with Shoal Creek in Cherokee County, Georgia, and continuing upstream through Forsyth and Dawson Counties to approximately 0.5 miles upstream of the Jay Bridge Road crossing over the Etowah River in Lumpkin County, Georgia. Unit 2 does not extend beyond the bankfull width of the river. Frecklebelly madtom occupies all river reaches in this unit. Unit 2 contains all of the physical or biological features essential to the conservation of the DPS.

Special management considerations or protection may be required within Unit 2 to alleviate impacts from stressors that are anticipated to amplify degradation of the habitat, including sedimentation, pollutant input, excess nutrient input, development, and unstable stream banks. Increased development, including urban development and runoff, dam construction and use, and paved and unpaved roads, in the surrounding watershed and riparian area has led to higher levels of sedimentation, siltation, contamination, and nutrient-loading, as well as destabilized stream banks. Special management considerations related to agricultural and developed areas that will benefit the habitat in this unit include, but are not limited to, riparian buffer restoration, reduced surface and ground water withdrawals, increased open space in the watershed, and implementing highest levels of treatment of wastewater practicable.

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification

of designated critical habitat of such species. We published a final rule revising the definition of destruction or adverse modification on August 27, 2019 (84 FR 44976). Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species.

If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Examples of actions that are subject to the section 7 consultation process are actions on State, Tribal, local, or private lands that require a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from the Service under section 10 of the Act) or that involve some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency). Federal actions not affecting listed species or critical habitat—and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or carried out by a Federal agency—do not require section 7 consultation.

Compliance with the requirements of section 7(a)(2) is documented through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species and/or destroy or adversely modify critical habitat, we provide reasonable and prudent alternatives to the project, if any are identifiable, that would avoid the likelihood of jeopardy and/or destruction or adverse modification of critical habitat. We define “reasonable and prudent alternatives” (at 50 CFR 402.02) as alternative actions identified during consultation that:

- (1) Can be implemented in a manner consistent with the intended purpose of the action,
- (2) Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,
- (3) Are economically and technologically feasible, and
- (4) Would, in the Service Director's opinion, avoid the likelihood of jeopardizing the continued existence of the listed species and/or avoid the likelihood of destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 set forth requirements for Federal agencies to reinitiate formal consultation on previously reviewed actions. These requirements apply when the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law) and, subsequent to the previous consultation: (a) If the amount or extent of taking specified in the incidental take statement is exceeded; (b) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (c) if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or (d) if a new species is listed or critical habitat designated that may be affected by the identified action.

In such situations, Federal agencies sometimes may need to request reinitiation of consultation with us, but the regulations also specify some exceptions to the requirement to reinitiate consultation on specific land management plans after subsequently listing a new species or designating new critical habitat. See the regulations for a description of those exceptions.

Application of the "Adverse Modification" Standard

The key factor related to the destruction or adverse modification determination is whether implementation of the proposed Federal action directly or indirectly alters the designated critical habitat in a way that appreciably diminishes the value of the critical habitat as a whole for the conservation of the listed species. As discussed above, the role of critical habitat is to support physical or biological features essential to the conservation of a listed species and provide for the conservation of the species.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may violate section 7(a)(2) of the Act by destroying or adversely modifying such habitat, or that may be affected by such designation.

Activities that we may, during a consultation under section 7(a)(2) of the Act, consider likely to destroy or adversely modify critical habitat include, but are not limited to:

(1) Actions that would alter the minimum flow or existing flow regime. Such activities could include, but are not limited to, impoundment, channelization, water diversion, water withdrawal, hydropower generation, and flood control. These activities could eliminate or reduce the habitat necessary for the growth and reproduction of the Upper Coosa River DPS by altering flows to levels that would adversely affect the Upper Coosa River DPS's ability to complete its life cycle.

(2) Actions that would significantly alter water chemistry or quality. Such activities could include, but are not limited to, release of chemicals or biological pollutants into the surface water or connected groundwater at a point source or by dispersed release (non-point source). These activities could alter water conditions to levels that are beyond the tolerances of the Upper Coosa River DPS and result in direct or cumulative adverse effects to individuals and their life cycles.

(3) Actions that would significantly increase sediment deposition within the stream channel. Such activities could include, but are not limited to, excessive sedimentation from livestock grazing, road construction, channel alteration, and other watershed and floodplain

disturbances. These activities could eliminate or reduce the habitat necessary for the growth and reproduction of the Upper Coosa River DPS by increasing the sediment deposition to levels that would adversely affect the DPS's ability to complete its life cycle.

(4) Actions that would significantly increase eutrophication (the addition of excessive nutrients that are typically limited in aquatic environments, such as nitrogen and phosphorus that cause phytoplankton to proliferate). Such activities could include, but are not limited to, release of excessive nutrients into the surface water or connected groundwater at a point source or by dispersed release (non-point source). These activities could result in excessive nutrients and algae filling streams and reducing habitat, degrading water quality from excessive nutrients and algae decay, and decreasing oxygen levels below the tolerances of the DPS.

(5) Actions that would significantly alter channel morphology or geometry, or decrease connectivity. Such activities could include, but are not limited to, channelization, impoundment, road and bridge construction, mining, dredging, and destruction of riparian vegetation. These activities may lead to changes in water flows and levels that would degrade or eliminate the Upper Coosa River DPS and its habitats. These actions could also lead to increased sedimentation and degradation in water quality to levels beyond the tolerances of the DPS.

(6) Actions that result in the introduction, spread, or augmentation of nonnative aquatic species in occupied stream segments, or in stream segments that are hydrologically connected to occupied stream segments, or introduction of other species that compete with or prey on the Upper Coosa River DPS. Possible actions could include, but are not limited to, stocking of nonnative fishes and crayfishes, or other related actions. These activities could introduce parasites or disease; result in direct predation or direct competition; or affect the growth, reproduction, and survival of the DPS.

Exemptions

Application of Section 4(a)(3) of the Act

Section 4(a)(3)(B)(i) of the Act (16 U.S.C. 1533(a)(3)(B)(i)) provides that the Secretary shall not designate as critical habitat any lands or other geographical areas owned or controlled by the Department of Defense (DoD), or designated for its use, that are subject to an integrated natural resources management plan (INRMP) prepared under section 101 of the Sikes Act Improvement Act of 1997 (16 U.S.C. 670a), if the Secretary determines in writing that such plan provides a benefit to the species for which critical habitat is proposed for designation. There are no DoD lands within this final critical habitat designation.

Consideration of Impacts under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary shall designate and make revisions to critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat based on economic impacts, impacts on national security, or any other relevant impacts. Exclusion decisions are governed by the regulations at 50 CFR 424.19 and the Policy Regarding Implementation of Section 4(b)(2) of the Endangered Species Act, 81 FR 7226 (Feb. 11, 2016) (2016 Policy) both of which were developed jointly with the National Marine Fisheries Service (NMFS). We also refer to a 2008 Department of the Interior Solicitor's opinion entitled "The Secretary's Authority to Exclude Areas from a Critical Habitat Designation under Section 4(b)(2) of the Endangered Species Act" (M-37016). We explain each decision to exclude areas, as well as decisions not to exclude, to demonstrate that the decision is reasonable.

In considering whether to exclude a particular area from the designation, we identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and evaluate whether the benefits of exclusion outweigh the benefits of inclusion. If the analysis indicates that the benefits of exclusion outweigh the benefits of inclusion, the Secretary may exercise discretion to exclude the area only if such exclusion would not result in the extinction of the species. The Secretary may exclude any particular area if she

determines that the benefits of such exclusion outweigh the benefits of including such area as part of the critical habitat, unless she determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making the determination to exclude a particular area, the statute on its face, as well as the legislative history, are clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor. In this final rule, we are not excluding any areas from the critical habitat designation.

Exclusions Based on Economic Impacts

Section 4(b)(2) of the Act and its implementing regulations require that we consider the economic impact that may result from a designation of critical habitat. In order to consider economic impacts, we prepared an incremental effects memorandum (IEM) and screening analysis which, together with our narrative and interpretation of effects, we consider our economic analysis of the critical habitat designation and related factors (IEc 2020, entire). The analysis, dated June 23, 2020, was made available for public review from November 19, 2020, through January 19, 2021 (85 FR 74050). The economic analysis addressed probable economic impacts of critical habitat designation for the Upper Coosa River DPS of frecklebelly madtom. Following the close of the comment period, we reviewed and evaluated all information submitted during the comment period that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Additional information relevant to the probable incremental economic impacts of critical habitat designation for the Upper Coosa River DPS of frecklebelly madtom is summarized below and available in the screening analysis for the DPS (IEc 2020, entire), available at <https://www.regulations.gov>.

Executive Orders (E.O.s) 12866 and 13563 direct Federal agencies to assess the costs and benefits of available regulatory alternatives in quantitative (to the extent feasible) and qualitative terms. Consistent with the E.O. regulatory analysis requirements, our effects analysis under the Act may take into consideration impacts to both directly and indirectly affected entities, where

practicable and reasonable. If sufficient data are available, we assess to the extent practicable the probable impacts to both directly and indirectly affected entities. As part of our screening analysis, we considered the types of economic activities that are likely to occur within the areas likely affected by the critical habitat designation. In our evaluation of the probable incremental economic impacts that may result from the designation of critical habitat for the Upper Coosa River DPS, first we identified, in the IEM dated June 23, 2020, probable incremental economic impacts associated with the following categories of activities: (1) Federal lands management (U.S. Forest Service and U.S. Army Corps of Engineers); (2) agriculture; (3) development; (4) roadway and bridgeway construction; (5) dredging, dams, and diversions; (6) flood control and hydropower; (7) wastewater and chemical discharge; (8) pesticide use; (9) recreation; (10) conservation and restoration; and (11) transportation and utilities. We considered each industry or category individually. Additionally, we considered whether these activities have any Federal involvement. Critical habitat designation generally will not affect activities that do not have any Federal involvement; under the Act, designation of critical habitat only affects activities conducted, funded, permitted, or authorized by Federal agencies. In areas where individuals from the Upper Coosa River DPS are found, Federal agencies are required to ensure that their actions are not likely to jeopardize the continued existence of the DPS under section 7 consultation procedures. With this critical habitat designation, consultations to avoid the destruction or adverse modification of critical habitat will be incorporated into the existing consultation process.

In our IEM, we attempted to clarify the distinction between the effects that will result from the species being listed and those attributable to the critical habitat designation (*i.e.*, difference between the jeopardy and adverse modification standards) for the Upper Coosa River DPS's critical habitat. Because the designation of critical habitat for the Upper Coosa River DPS is being finalized concurrently with the listing, it has been our experience that it is more difficult to discern which conservation efforts are attributable to the species being listed and those which

will result solely from the designation of critical habitat. However, the following specific circumstances in this case help to inform our evaluation: (1) The essential physical or biological features identified for critical habitat are the same features essential for the life requisites of the species, and (2) any actions that would result in sufficient harm or harassment to constitute jeopardy to the Upper Coosa River DPS would also likely adversely affect the essential physical or biological features of critical habitat. The IEM outlines our rationale concerning this limited distinction between baseline conservation efforts and incremental impacts of the designation of critical habitat for this species. This evaluation of the incremental effects has been used as the basis to evaluate the probable incremental economic impacts of this designation of critical habitat.

The final critical habitat designation for the Upper Coosa River DPS totals approximately 134 river miles (mi) (216 river kilometers (km)) in two occupied units in Georgia and Tennessee. In these areas, any actions that may affect the species will also affect critical habitat because all designated habitat is occupied. Thus, it is unlikely that any additional conservation efforts will be recommended to address the adverse modification standard over and above those recommended as necessary to avoid jeopardizing the continued existence of the Upper Coosa River DPS. Therefore, the only additional costs that are expected in all of the critical habitat designation are administrative costs. These costs are due to additional consultation analysis requiring time and resources by both the Federal action agency and the Service. However, these costs are not expected to reach the threshold of “significant” under E.O. 12866. We anticipate a maximum of 10 section 7 consultations annually at a total incremental cost of less than \$11,000 per year.

In our November 19, 2020 proposed rule (85 FR 74050), we solicited data and comments from the public on the draft economic analysis, as well as all aspects of the proposed rule and our required determinations. We did not receive any additional information on economic impacts during that public comment period to determine whether any specific areas should be excluded from this final critical habitat designation under the authority of section 4(b)(2) of the Act and

our implementing regulations at 50 CFR 424.19.

Exclusions Based on Impacts on National Security and Homeland Security

In preparing this rule, we have determined that the lands within the designation of critical habitat for the Upper Coosa River DPS are not owned or managed by the DoD or the Department of Homeland Security, and, therefore, we anticipate no impact on national security or homeland security. We did not receive any additional information during the November 19, 2020, proposed rule's public comment period on the impacts of the designation on national security or homeland security that would support excluding any specific areas from this final critical habitat designation under authority of section 4(b)(2) of the Act and our implementing regulations at 50 CFR 424.19, as well as the 2016 Policy.

Exclusions Based on Other Relevant Impacts

Under section 4(b)(2) of the Act, we consider any other relevant impacts, in addition to economic impacts and impacts on national security as discussed above. To identify other relevant impacts that may affect the exclusion analysis, we consider a number of factors, including whether there are permitted conservation plans covering the species in the area such as HCPs, safe harbor agreements (SHAs), or candidate conservation agreements with assurances (CCAAs), or whether there are non-permitted conservation agreements and partnerships that would be encouraged by designation of, or exclusion from, critical habitat. In addition, we look at whether Tribal conservation plans or partnerships, Tribal resources, or government-to-government relationships of the United States with Tribal entities may be affected by the designation. We also consider any State, local, social, or other impacts that might occur because of the designation.

In preparing this rule, we have determined that there are currently no HCPs or other management plans for the Upper Coosa River DPS, and the final designation does not include any Tribal lands or trust resources. Therefore, we anticipate no impact on Tribal lands, partnerships, or HCPs from this final critical habitat designation. We did not receive any

additional information during the public comment period for the proposed rule regarding other relevant impacts to support excluding any specific areas from the final critical habitat designation under authority of section 4(b)(2) and our implementing regulations at 50 CFR 424.19, as well as the 2016 Policy.

As discussed above, we did not identify impacts on national security, economic, or any other relevant impacts as a result of this designation. Accordingly, the Secretary is not exercising her discretion to exclude any areas from the critical habitat designation.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA; 5 U.S.C. 601 *et seq.*), as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA; 5 U.S.C. 801 *et seq.*), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that

describes the effects of the rule on small entities (*i.e.*, small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the RFA to require Federal agencies to provide a certification statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

According to the Small Business Administration, small entities include small organizations such as independent nonprofit organizations; small governmental jurisdictions, including school boards and city and town governments that serve fewer than 50,000 residents; and small businesses (13 CFR 121.201). Small businesses include manufacturing and mining concerns with fewer than 500 employees, wholesale trade entities with fewer than 100 employees, retail and service businesses with less than \$5 million in annual sales, general and heavy construction businesses with less than \$27.5 million in annual business, special trade contractors doing less than \$11.5 million in annual business, and agricultural businesses with annual sales less than \$750,000. To determine whether potential economic impacts to these small entities are significant, we considered the types of activities that might trigger regulatory impacts under this designation as well as types of project modifications that may result. In general, the term “significant economic impact” is meant to apply to a typical small business firm’s business operations.

Under the RFA, as amended, and following recent court decisions, Federal agencies are required to evaluate the potential incremental impacts of rulemaking on those entities directly regulated by the rulemaking itself; in other words, the RFA does not require agencies to evaluate the potential impacts to indirectly regulated entities. The regulatory mechanism through which critical habitat protections are realized is section 7 of the Act, which requires Federal agencies, in consultation with the Service, to ensure that any action authorized, funded, or carried out by the agency is not likely to destroy or adversely modify critical habitat. Therefore, under section 7,

only Federal action agencies are directly subject to the specific regulatory requirement (avoiding destruction and adverse modification) imposed by critical habitat designation. Consequently, it is our position that only Federal action agencies will be directly regulated by this designation.

There is no requirement under the RFA to evaluate the potential impacts to entities not directly regulated. Moreover, Federal agencies are not small entities. Therefore, because no small entities will be directly regulated by this rulemaking, the Service certifies that this final critical habitat designation will not have a significant economic impact on a substantial number of small entities.

During the development of this final rule, we reviewed and evaluated all information submitted during the comment period on the November 19, 2020, proposed rule (85 FR 74050) that may pertain to our consideration of the probable incremental economic impacts of this critical habitat designation. Based on this information, we affirm our certification that this critical habitat designation will not have a significant economic impact on a substantial number of small entities, and a regulatory flexibility analysis is not required.

Energy Supply, Distribution, or Use—Executive Order 13211

Executive Order 13211 (Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) requires agencies to prepare Statements of Energy Effects when undertaking certain actions. The Office of Management and Budget (OMB) provides guidance for implementing this Executive Order, outlining nine outcomes (criteria) that may constitute “a significant adverse effect” when compared with the regulatory action under consideration. The economic analysis finds that none of these criteria are relevant to this analysis, and therefore, we did not find that this critical habitat designation will significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following finding:

(1) This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both “Federal intergovernmental mandates” and “Federal private sector mandates.” These terms are defined in 2 U.S.C. 658(5)–(7). “Federal intergovernmental mandate” includes a regulation that “would impose an enforceable duty upon State, local, or Tribal governments” with two exceptions. It excludes “a condition of Federal assistance.” It also excludes “a duty arising from participation in a voluntary Federal program,” unless the regulation “relates to a then-existing Federal program under which \$500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority,” if the provision would “increase the stringency of conditions of assistance” or “place caps upon, or otherwise decrease, the Federal Government’s responsibility to provide funding,” and the State, local, or Tribal governments “lack authority” to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; Aid to Families with Dependent Children work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. “Federal private sector mandate” includes a regulation that “would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.”

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be

indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(2) We do not believe that this rule will significantly or uniquely affect small governments, because it will not produce a Federal mandate of \$100 million or greater in any year, that is, it is not a “significant regulatory action” under the Unfunded Mandates Reform Act. The designation of critical habitat imposes no obligations on State or local governments and, as such, a Small Government Agency Plan is not required.

Takings—Executive Order 12630

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating critical habitat for Upper Coosa River DPS in a takings implications assessment. The Act does not authorize us to regulate private actions on private lands or confiscate private property as a result of critical habitat designation. Designation of critical habitat does not affect land ownership, or establish any closures, or restrictions on use of or access to the designated areas. Furthermore, the designation of critical habitat does not affect landowner actions that do not require Federal funding or permits, nor does it preclude development of habitat conservation programs or issuance of incidental take permits to permit actions that do require Federal funding or permits to go forward. However, Federal agencies are prohibited from carrying out, funding, or authorizing actions that would destroy or adversely modify critical habitat. A takings implications assessment has been completed for the designation of critical habitat for Upper Coosa River DPS, and it concludes that this designation

of critical habitat does not pose significant takings implications for lands within or affected by the designation.

Federalism—Executive Order 13132

In accordance with E.O. 13132 (Federalism), this rule does not have significant Federalism effects. A federalism summary impact statement is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of this critical habitat designation with, appropriate State resource agencies. From a federalism perspective, the designation of critical habitat directly affects only the responsibilities of Federal agencies. The Act imposes no other duties with respect to critical habitat, either for States and local governments, or for anyone else. As a result, the rule does not have substantial direct effects either on the States, or on the relationship between the national government and the States, or on the distribution of powers and responsibilities among the various levels of government. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the species are more clearly defined, and the physical or biological features of the habitat essential to the conservation of the species are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist State and local governments in long-range planning because they no longer have to wait for case-by-case section 7 consultations to occur.

Where State and local governments require approval or authorization from a Federal agency for actions that may affect critical habitat, consultation under section 7(a)(2) of the Act will be required. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action, may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency.

Civil Justice Reform—Executive Order 12988

In accordance with Executive Order 12988 (Civil Justice Reform), the Office of the Solicitor has determined that the rule will not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We are designating critical habitat in accordance with the provisions of the Act. To assist the public in understanding the habitat needs of the species, this final rule identifies the physical or biological features essential to the conservation of the species. The designated areas of critical habitat are presented on maps, and the rule provides several options for the interested public to obtain more detailed location information, if desired.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*) is not required. We may not conduct or sponsor, and you are not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

It is our position that we do not need to prepare environmental analyses pursuant to the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*) in connection with regulations adopted pursuant to section 4(a) of the Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244). This position was upheld by the Court of Appeals for the Ninth Circuit (*Douglas County v. Babbitt*, , 48 F.3d 1495 (9th Cir. 1995)).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government

basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have identified no Tribal interests that would be affected by the listing of the Upper Coosa River DPS of the frecklebelly madtom. We have also determined that no Tribal lands fall within the boundaries of the critical habitat designation for the Upper Coosa River DPS, so no Tribal lands will be affected by the designation.

References Cited

A complete list of references cited in this rulemaking is available on the internet at <https://www.regulations.gov> and upon request from the Alabama Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the Fish and Wildlife Service's Species Assessment Team and the Alabama Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Plants, Reporting and recordkeeping requirements, Transportation, Wildlife.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

1. The authority citation for part 17 continues to read as follows:

AUTHORITY: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. Amend § 17.11, in paragraph (h), by adding an entry for “Madtom, frecklebelly [Upper Coosa River DPS]” to the List of Endangered and Threatened Wildlife in alphabetical order under FISHES to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
* * * * *				
FISHES				
* * * * *				
Madtom, frecklebelly [Upper Coosa River DPS]	<i>Noturus munitus</i>	Upper Coosa River Basin (GA, TN)	T	88 FR [Insert <i>Federal Register</i> page where the document begins]; [Insert date of publication in the <i>Federal Register</i>]; 50 CFR 17.44(ff); ^{4d} 50 CFR 17.95(e). ^{CH}
* * * * *				

3. Amend § 17.44 by adding paragraph (ff) to read as follows:

§ 17.44 Special rules—fishes.

* * * * *

(ff) Upper Coosa River DPS of the frecklebelly madtom (*Noturus munitus*).

(1) *Prohibitions.* The following prohibitions that apply to endangered wildlife also apply to the Upper Coosa River DPS. Except as provided under paragraph (ff)(2) of this section and §§ 17.4 and 17.5, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this DPS:

(i) Import or export, as set forth at § 17.21(b) for endangered wildlife.

(ii) Take, as set forth at § 17.21(c)(1) for endangered wildlife.

(iii) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1) for endangered wildlife.

(iv) Interstate or foreign commerce in the course of a commercial activity, as set forth at § 17.21(e) for endangered wildlife.

(v) Sale or offer for sale, as set forth at § 17.21(f) for endangered wildlife.

(2) *Exceptions from prohibitions.* In regard to this DPS, you may:

(i) Conduct activities as authorized by a permit under §17.32.

(ii) Take, as set forth at § 17.21(c)(2) through (c)(4) for endangered wildlife.

(iii) Take, as set forth at § 17.31(b).

(iv) Take incidental to an otherwise lawful activity caused by:

(A) Channel restoration projects that create natural, physically stable, ecologically functioning streams. These projects can be accomplished using a variety of methods, but the desired outcome is a natural channel with geomorphically stable stream channels that maintain the appropriate lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation and include stable riffle-run-pool complexes that consist of silt-free gravel, coarse sand, cobble, boulders, woody structure, and river weed (*Podostemum* spp.).

(B) Streambank stabilization projects that use bioengineering methods to replace pre-existing, bare, eroding stream banks with natively vegetated, stable stream banks, thereby reducing bank erosion and instream sedimentation and improving habitat conditions for the DPS. Stream banks may be stabilized using native live stakes (live, vegetative cuttings inserted or tamped into the ground in a manner that allows the stake to take root and grow), native live fascines (live branch cuttings, usually willows, bound together into long, cigar-shaped bundles), or native brush layering (cuttings or branches of easily rooted tree species layered between successive lifts of soil fill). Stream banks must not be stabilized solely through the use of quarried rock (rip-rap) or the use of rock baskets or gabion structures.

(C) Projects carried out in the DPS's range under the Working Lands for Wildlife program of the Natural Resources Conservation Service, U.S. Department of Agriculture, or similar projects conducted by the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program or the Environmental Protection Agency's 319 Grant Program, that are implemented with a primary objective of improving environmental conditions to support the native, aquatic biodiversity of flowing water habitats.

(D) Silviculture practices and forest management activities that implement State-approved best management practices to protect water and sediment quality and stream and riparian habitat.

(v) Possess and engage in other acts with unlawfully taken wildlife, as set forth at § 17.21(d)(2) for endangered wildlife.

4. Amend § 17.95, in paragraph (e), by adding an entry for "Frecklebelly Madtom [Upper Coosa River DPS] (*Noturus munitus*)" after the entry for "Chucky Madtom (*Noturus crypticus*)", to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(e) *Fishes.*

* * * * *

Frecklebelly Madtom [Upper Coosa River DPS] (*Noturus munitus*)

(1) Critical habitat units are depicted for Bradley and Polk Counties, Tennessee, and Cherokee, Dawson, Forsyth, Lumpkin, Murray, and Whitfield Counties, Georgia, on the maps in this entry.

(2) Within these areas, the physical or biological features essential to the conservation of the Upper Coosa River distinct population segment (DPS) consist of the following components:

(i) Geomorphically stable, medium to large streams with:

(A) Stable stream channels that maintain lateral dimensions, longitudinal profiles, and sinuosity patterns over time without an aggrading or degrading bed elevation; and

(B) Banks with intact riparian cover to maintain stream morphology and reduce erosion and sediment inputs.

(ii) Connected instream habitats that:

(A) Include stable riffle-run-pool complexes;

(B) Consist of silt-free gravel, coarse sand, cobble, boulders, woody structure, and river weed (*Podostemum* spp.); and

(C) Have abundant cobble, boulders, woody structure, or other suitable cover used for nesting.

(iii) Adequate flows, or a hydrologic flow regime (which includes the severity, frequency, duration, and seasonality of discharge over time), necessary to maintain instream habitats and to maintain connectivity of streams with the floodplain, allowing the exchange of nutrients and sediment for maintenance of the fish's habitat, food availability, and ample oxygenated flow for spawning and nesting habitat.

(iv) Appropriate water and sediment quality (including, but not limited to, conductivity; hardness; turbidity; temperature; pH; ammonia; heavy metals; pesticides; animal waste products; and nitrogen, phosphorus, and potassium fertilizers) necessary to sustain natural physiological processes for normal behavior, growth, and viability of all life stages.

(v) Diversity and availability of aquatic macroinvertebrate prey items, which include larval midges, mayflies, caddisflies, dragonflies, and beetles.

(3) Critical habitat does not include humanmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

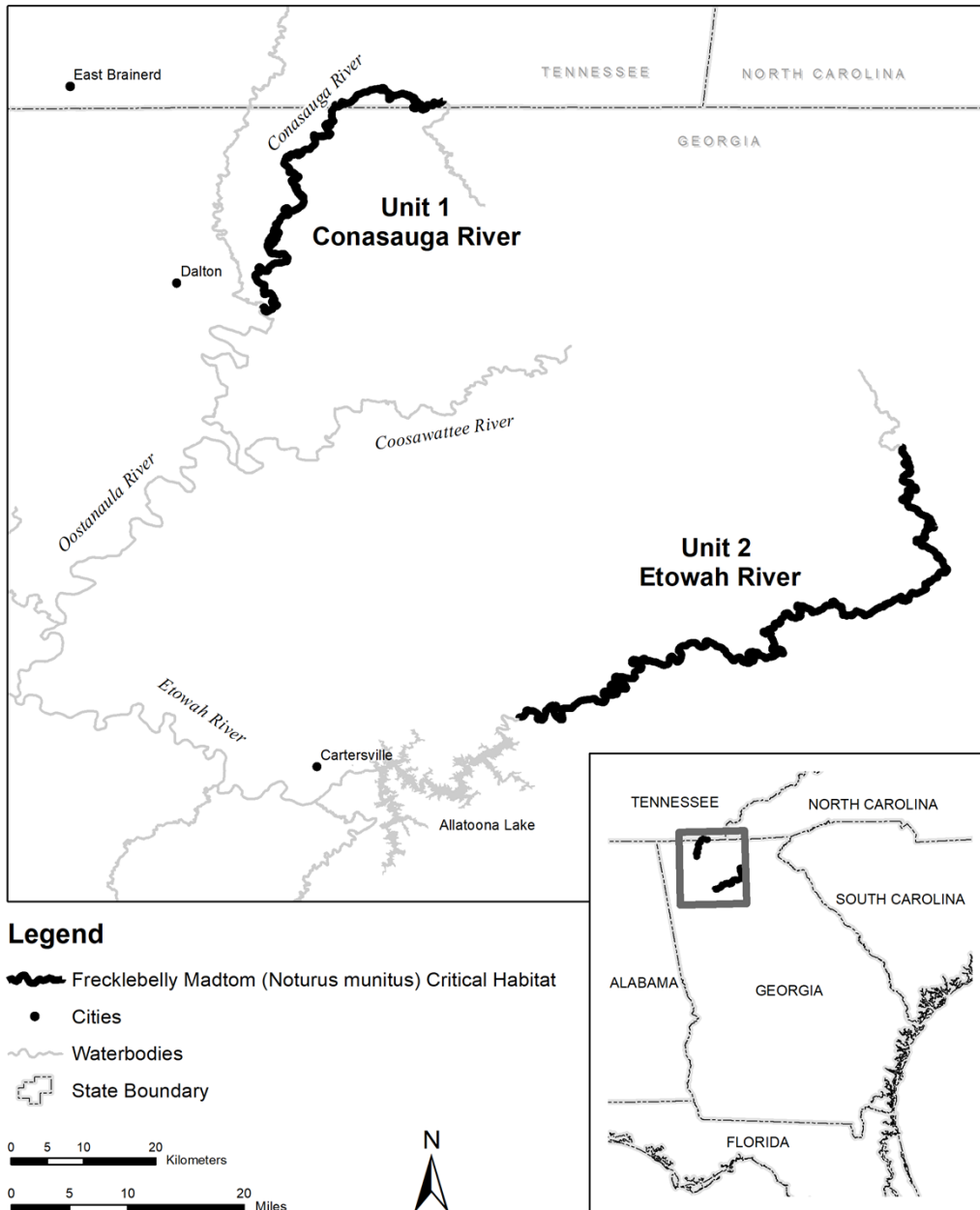
(4) Data layers defining map units were selected from the U.S. Geological Survey National Hydrological Dataset—High Resolution (1:24,000 scale; Geographic Coordinate System North American 1983 coordinates) using mapping software. The selected river reaches were informed by species occurrence data. All layers use Universal Transverse Mercator (UTM) Zone 16N coordinates. We also used the mapping software to calculate the length of the units. The maps in this entry, as modified by any accompanying regulatory text, establish the boundaries of the critical habitat designation. The coordinates or plot points or both on which each map is based are available to the public at the Service’s internet site at <https://www.fws.gov/about/region/southeast>, at <https://www.regulations.gov> at Docket No. FWS-R4-ES-2020-0058, and at the field office responsible for this designation. You may obtain field office location information by contacting one of the Service regional offices, the addresses of which are listed at 50 CFR 2.2.

(5) Index map follows:

Figure 1 to Frecklebelly Madtom [Upper Coosa River DPS] (*Noturus munitus*) paragraph (5)

Frecklebelly Madtom (*Noturus munitus*) Critical Habitat Index Map

Cherokee, Dawson, Forsyth, Lumpkin, Murray, Whitfield Counties Georgia, Bradley, Polk Counties Tennessee



(6) Unit 1: Conasauga River; Bradley and Polk Counties, Tennessee, and Murray and Whitfield Counties, Georgia.

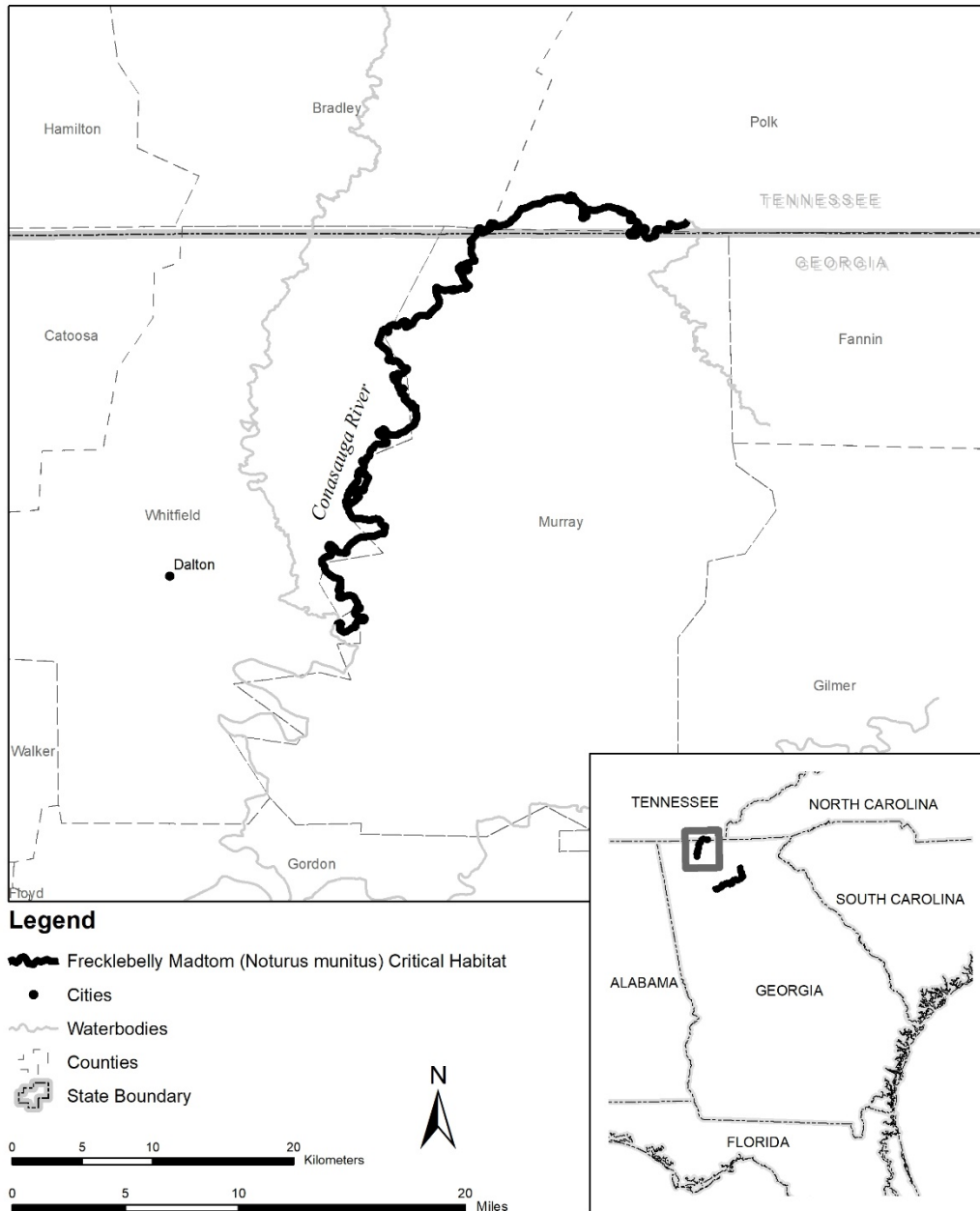
(i) Unit 1 consists of 51.5 river miles (83 kilometers) of the Conasauga River beginning at the mouth of Coahulla Creek in Murray and Whitfield Counties, Georgia, and continuing upstream through Bradley County, Tennessee, to the mouth of Graham Branch in Polk County, Tennessee. Unit 1 does not extend beyond the bankfull width of the river.

(ii) Map of Unit 1 follows:

Figure 2 to Frecklebelly Madtom [Upper Coosa River DPS] (*Noturus munitus*) paragraph (6)(ii)

Frecklebelly Madtom (*Noturus munitus*) Critical Habitat Unit 1: Conasauga River

Murray and Whitfield Counties, Georgia; Bradley and Polk Counties, Tennessee



(7) Unit 2: Etowah River, Cherokee, Dawson, Forsyth, and Lumpkin Counties, Georgia.

(i) Unit 2 consists of 82.5 river miles (133 kilometers) of the Etowah River beginning at its confluence with Shoal Creek in Cherokee County, Georgia, and continuing upstream through Forsyth and Dawson Counties to approximately 0.5 miles upstream of the Jay Bridge Road crossing over the Etowah River in Lumpkin County, Georgia. Unit 2 does not extend beyond the bankfull width of the river.

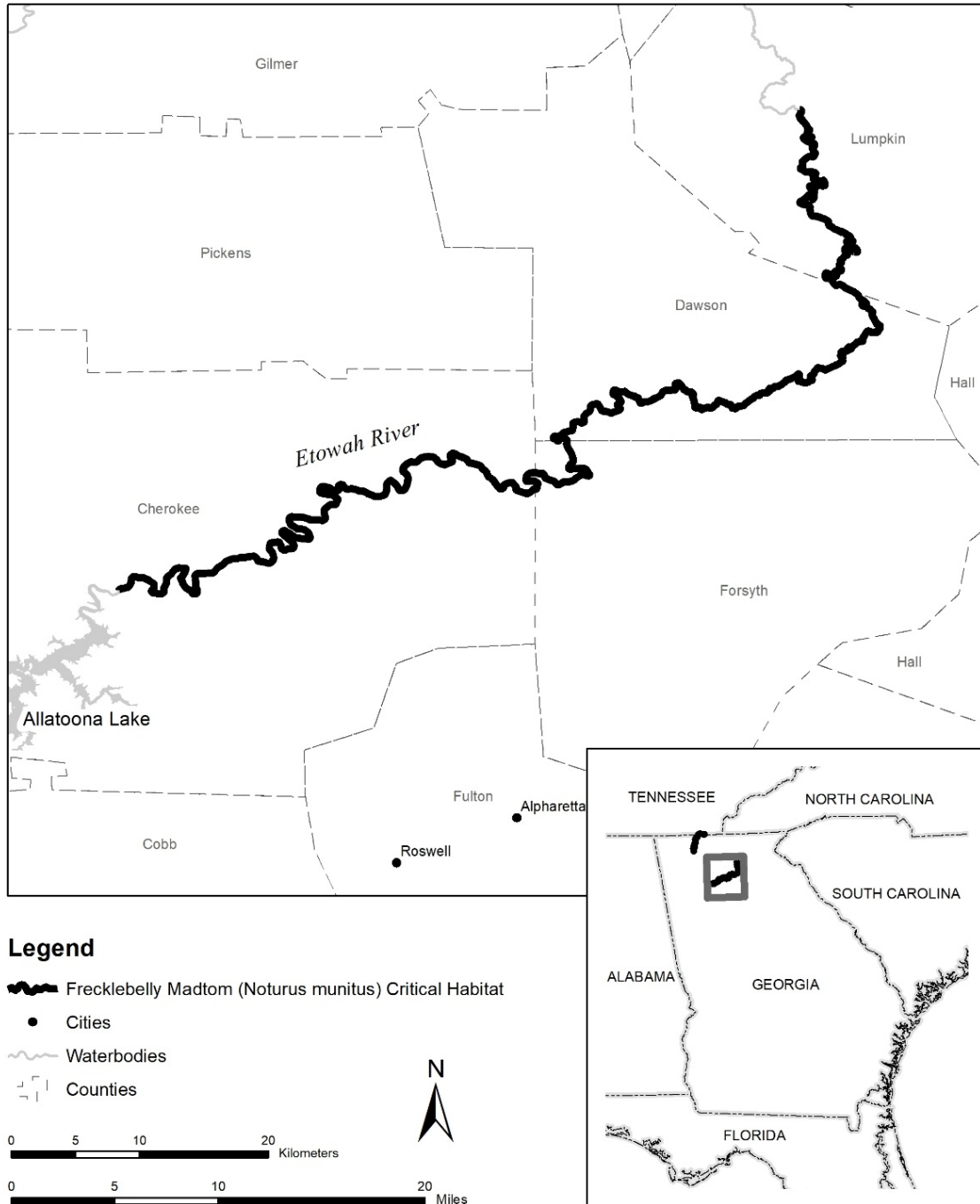
(ii) Map of Unit 2 follows:

Figure 3 to Frecklebelly Madtom [Upper Coosa River DPS] (*Noturus munitus*) paragraph (7)(ii)

Frecklebelly Madtom (*Noturus munitus*)

Critical Habitat Unit 2: Etowah River

Cherokee, Dawson, Forsyth, and Lumpkin Counties, Georgia



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